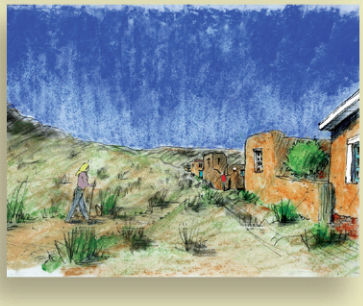
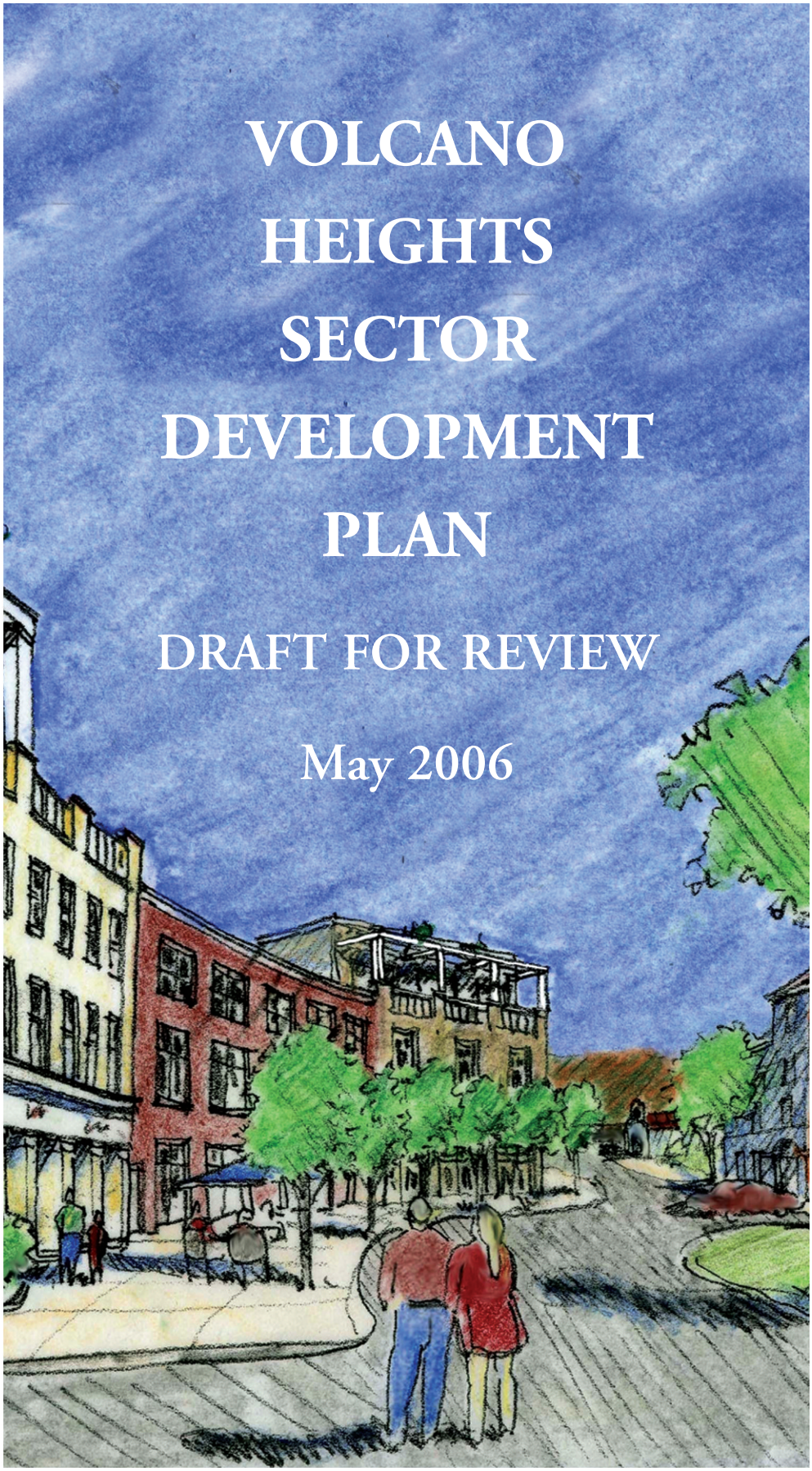


VOLCANO HEIGHTS SECTOR DEVELOPMENT PLAN

DRAFT FOR REVIEW

May 2006



VOLCANO HEIGHTS

SECTOR DEVELOPMENT PLAN

DRAFT FOR REVIEW

May 2006

Prepared for the City of Albuquerque

Planning Team:
Matt Taecker, Principal, Taecker Urban Design & Planning
Signe Rich, Planner, Shared Vision
Jolene Wolfley, Planner

Louis J. Colombo, City Council Deputy Director
Joel Wooldridge, Albuquerque Planning Department

Contents

Lists of maps and diagrams

EXHIBITS

DIAGRAMS

Figures

Cross Sections

Illustrative Plans

TABLES

Purpose and Authority

City legislation has guided the planning process for Volcano Heights.

On October 4, 2004 the City Council initiated the planning work by calling for a study of the Volcano Cliffs Plan Area (now called "Volcano Heights") to be completed in six months and instituting a moratorium on development (Bill No. R-04-145, Enactment No. R-2004-115). Finding that "The Volcanic Escarpment of the Northwest Mesa has long been considered a unique landscape that requires special protection" the Council expressed concerns over development trends with subdivisions being approved piecemeal without the guidance of an overall plan for the area.

The Council saw the need for a plan that would bring development in line with the *West Side Strategic Plan*, the *Northwest Mesa Escarpment Plan*, the *Albuquerque/ Bernalillo County Comprehensive Plan,* and other previously established policies such as Executive Communication EC-35. Issues to be addressed included transportation, drainage, water and wastewater, land uses, view corridors, building height, massing and orientation, walls, parks, trails and open space, and phasing and timing of growth.

Six months later on April 4, 2005 the Council received the *Volcano Heights Planning Study* report (Bill No. R-05-263, Enactment No. R-2005-052) as a foundation and guide to continue the planning and implementation process under a moratorium for a year. On March 6, 2006 (Bill No. R-06-44, Enactment No. R-2006-025) the Council extended the moratorium and set hearing dates for the Plan. In the meantime and throughout the planning process, subdivisions already in the City's development approval process exempted from the moratorium (including Vista Vieja and Longford) were reviewed to bring design more closely in line with adopted and recommended policies.

The *Volcano Heights Planning Study* forecasts over 100,000 additional residents in the Plan Area and adjoining areas on the Northwest Mesa. The Study identified several issues to be addressed through further planning: jobs/ housing imbalances caused by build-out with single-family subdivisions; anticipated traffic congestion and burden on West Side transportation systems; need for transit-supportive densities and design; need for consolidation and connection of open space and trails along drainage channels; and retaining access to exceptional views.

Given the development pressures the area now is experiencing, a plan guiding development in the area is long overdue. The goal of this process is a plan that results in more sustainable development benefiting property owners, West Side residents and the larger community.

The Volcano Heights Planning Management Team included the City Council Office as well as the City Planning Department.

Section One
Planning Framework

I
Conditions and Considerations

1. Plan Area

The Volcano Heights Plan Area (See **Exhibit 1** ***City Designated Plan Area*** *Exhibit A to Legislation*) covers 3,532 acres. The area is surrounded on three sides by more than 7,000 acres of open space under City, State and Federal jurisdictions. The shape of the open space holdings includes large tracts and long, narrow bands of escarpment. The Plan Area includes portions of the land the US Congress set aside as Petroglyph National Monument (the "Monument") in 1990. From east to west, the Plan Area extends from the volcanic Escarpment to the open space surrounding five dormant volcanoes. From north to south, the Plan Area extends from Paseo del Norte to city open space and the Monument.

Exhibit 2 ***Jurisdictions and Built or Approved Projects*** shows the relationship of the Plan Area to Albuquerque's West Side jurisdictions and development patterns and shows existing and planned development projects. **Exhibit 3** ***Aerial Context and Roadway Network*** provides an overview of the existing and proposed transportation system overlaid on an aerial view of the Plan Area and surroundings.

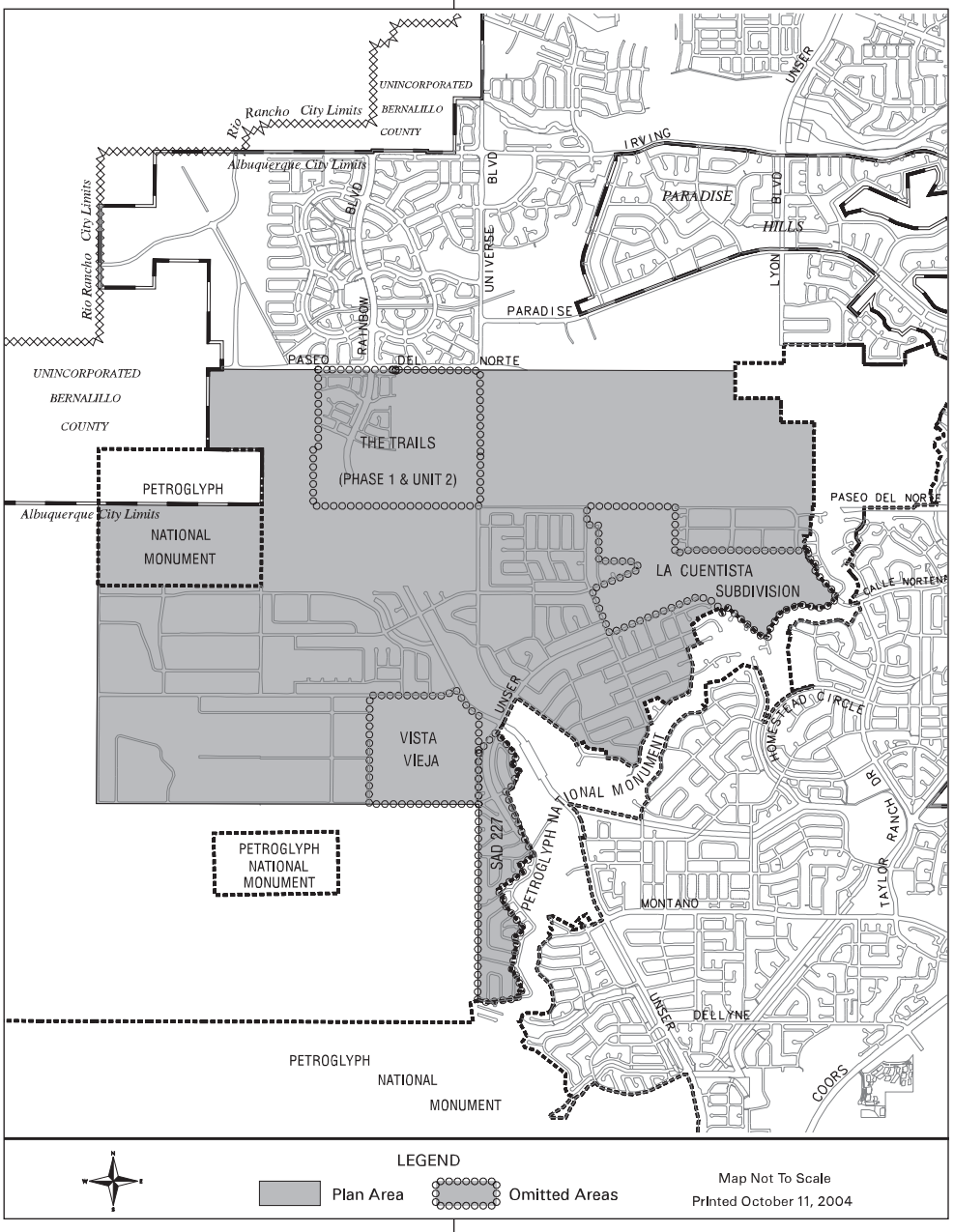


Exhibit 1
City Designated Plan Area

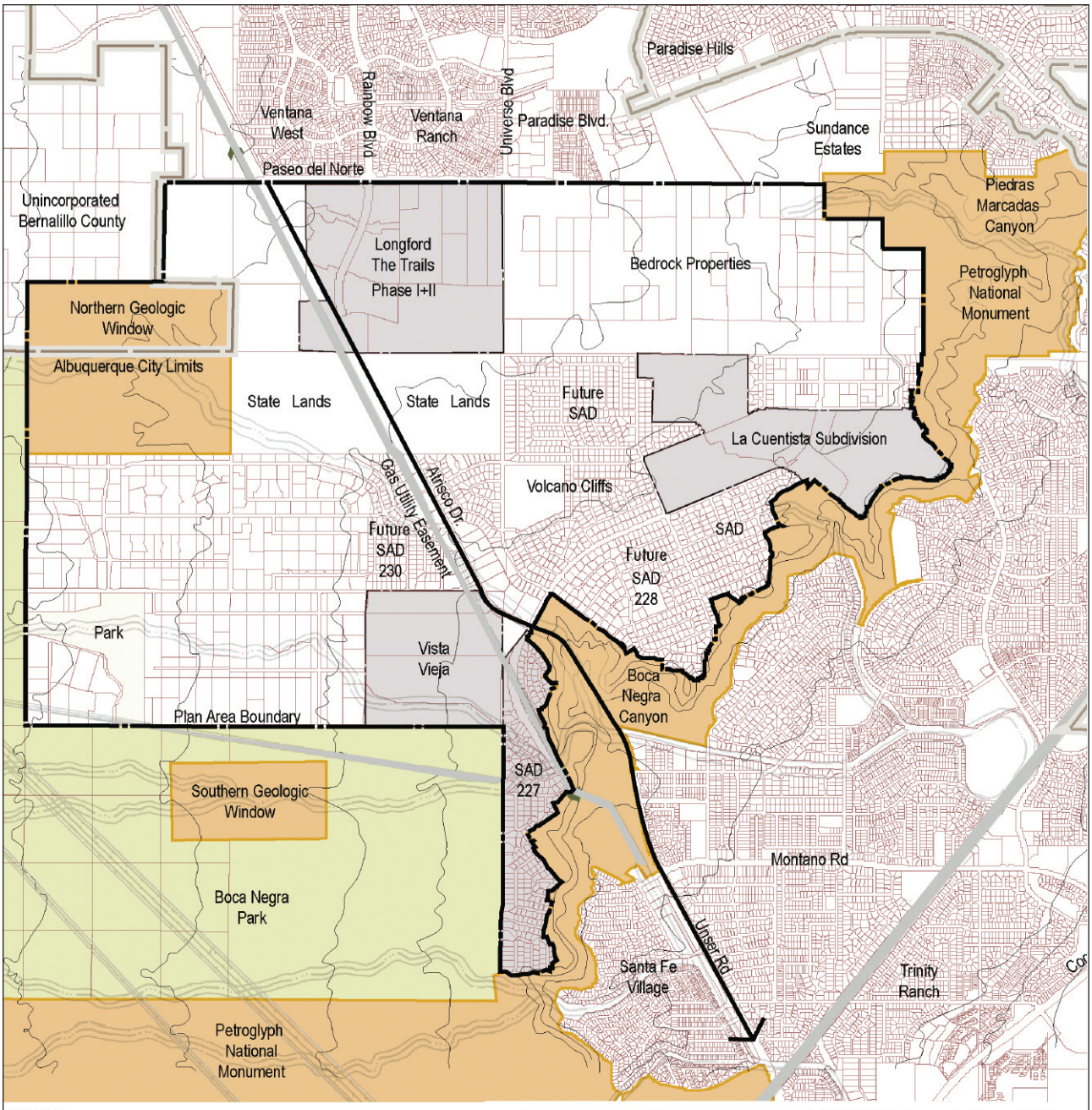

Paradise Hills
Ventana West
Rainbow Blvd.
Ventana Ranch
Universe Blvd.
Paradise Blvd.
Sundance Estates
Paseo del Norte
Unincorporated Bernalillo County
Piedras Marcadas Canyon
Longford The Trails Phase I+II
Bedrock Properties
Petroglyph National Monument
Northern Geologic Window
Albuquerque City Limits
State Lands
State Lands
Future SAD
La Cuentista Subdivision
Gas Utility Easement
Atrisco Dr.
Volcano Cliffs
Future SAD 230
SAD
Future SAD 228
Park
Vista Vieja
Boca Negra Canyon
Plan Area Boundary
SAD 227
Southern Geologic Window
Montano Rd
Boca Negra Park
Unser Rd.
Santa Fe Village
Trinity Ranch
Petroglyph National Monument
LEGEND
City Limits
Plan Area Boundary
Pipeline Projects (Exempt from Moratorium)
Utilities
City Owned Open Space
Petroglyph National Monument
N
Jurisdictions and Built or Approved Projects
May 1, 2006

Exhibit 2

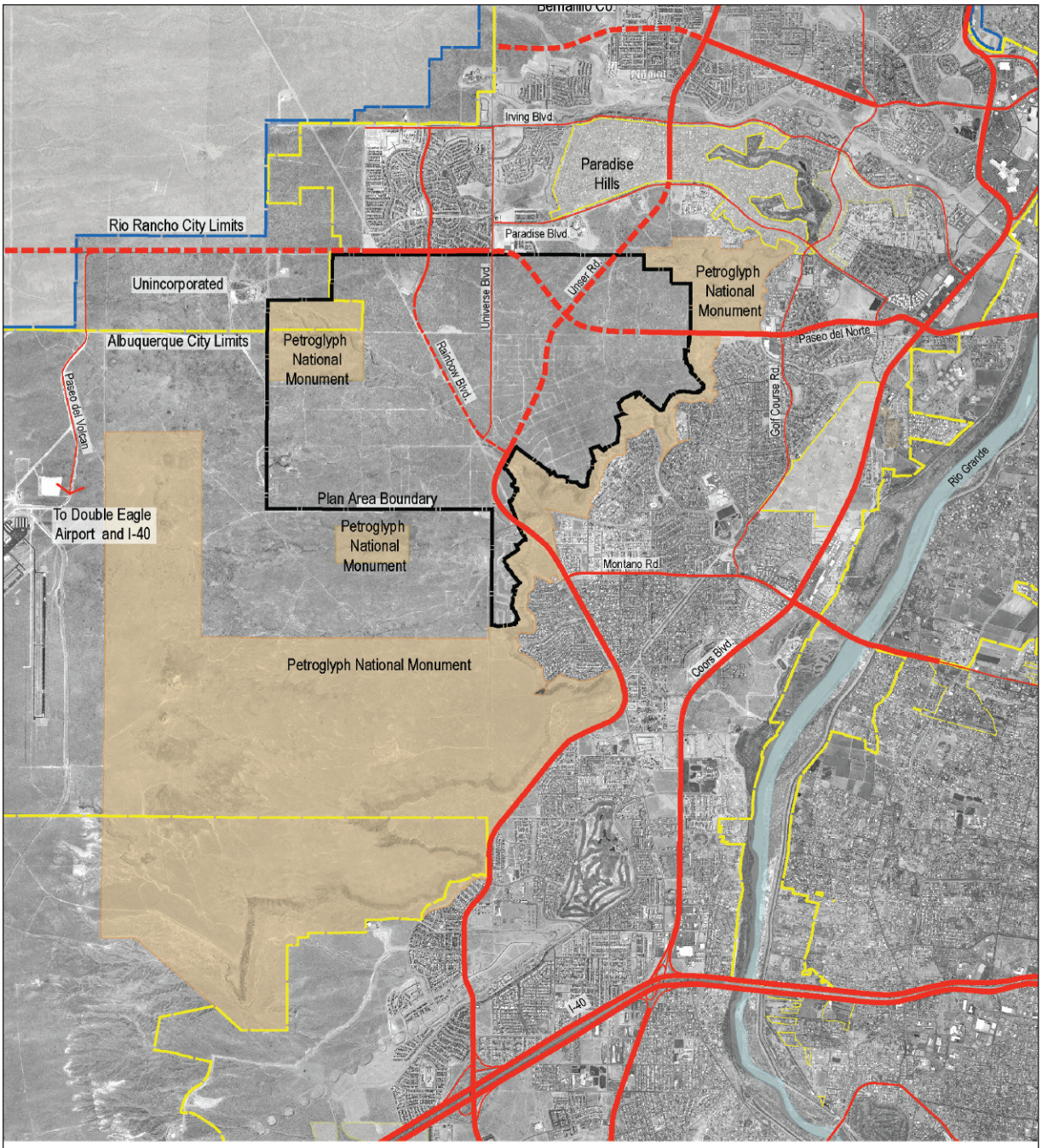

Bernalillo Co.
Irving Blvd.
Paradise Hills
Rio Rancho City Limits
Paradise Blvd.
Unincorporated
Universe Blvd.
Unser Rd.
Petroglyph National Monument
Albuquerque City Limits
Petroglyph National Monument
Rainbow Blvd.
Paseo del Norte
Golf Course Rd.
Paseo del Volcan
Rio Grande
Plan Area Boundary
To Double Eagle Airport and I-40
Petroglyph National Monument
Montano Rd.
Petroglyph National Monument
Coors Blvd.
I-40
LEGEND
Freeway
Limited Access Roadway
Proposed Limited Access Roadway
Principal Arterial
Minor Arterial
Plan Area
Albuquerque City Limits
Rio Rancho City Limits
Bernalillo County
Aerial Context and Roadway Network
May 1, 2006
N

Exhibit 3

2. The Meaning of Place: Natural and Cultural Features

(See **Exhibit 4** ***Natural and Cultural Features***)

Volcano Heights lies between publicly owned lands preserving the Escarpment and lands protecting the Volcanoes and Geologic Windows. Arroyos generally run west to east between these features.

Volcano Heights provides a unique portal into New Mexico's rich interplay of cultures**.** Most Albuquerque residents recognize the Monument as an important asset and associate it with the five volcanic cones and the 17-mile Escarpment containing petroglyphs.

There are more than 20,000 Petroglyphs dating from 700 to 3,000 years ago carved here and in other places within the Monument. A 2002 National Park Service ethnographic study—*"That Place People Talk About: The Petroglyph National Monument, Ethnographic Landscape Report,"* Anschuetz et. al., 2002, hereinafter referred to as "Anscheutz") illuminates the still active religious and cultural value these sacred places hold for many Native Americans.

This rich document explores the meaning of the West Mesa volcanic area for Pueblo and other Native American and Hispanic people. Because of space limitations, the present document approaches the meaning of the West Mesa area from the Rio Grande Pueblos' perspective; the reader is encouraged to read the entire *Ethnographic Landscape Report*.

The Monument legal boundaries were influenced by financial resources available for land acquisition. For the Pueblos, however, the site encompasses the entire lava bed, the volcanoes' caves and shafts, the Petroglyphs, and additional features of comparable importance in meaning and use. As planners, residents, and visitors, our responsibilities to the Volcano Heights area are the same as to the National Monument. Anschuetz 3.31, 9.9 writes: "Land-use planning in the face of development, to be successful, needs to consider how to *sustain* extant landscape traditions within an ongoing historical process."

Petroglyphs

According to Anscheutz, the Petroglyphs focus Pueblo people's concentration and prayer. Not just realistic representations of specific animals or people, the images are used to transmit thought, energy, and learning across space and time into other dimensions within a defined and bounded world.

Shrines, Caves, Lava Tubes in Volcanoes, Recesses in the Escarpment Face, and Elsewhere

Various other West Mesa sites function with the Petroglyphs as an interlocking system of spiritual communication. The lava tubes and caves near two northernmost Volcanoes west of the Plan Area contained shell beads, pendants, turquoise, hematite, selenite, mica, colored pebbles, prayer sticks, and feathers. These are places "where the world breathes" and prayers are directed. Arrangements of stones, boulders with pecked and ground facets, stone piles, prominent boulders, recesses in the Escarpment, or rock spires are similarly meaningful. (Anschuetz, 3.24-25) **See Exhibit 5** ***Petroglyphs***

The Pueblo World is often depicted as a bowl in the landscape with the community's plaza at its center, extending to distant mountains, with upper and lower realms as the

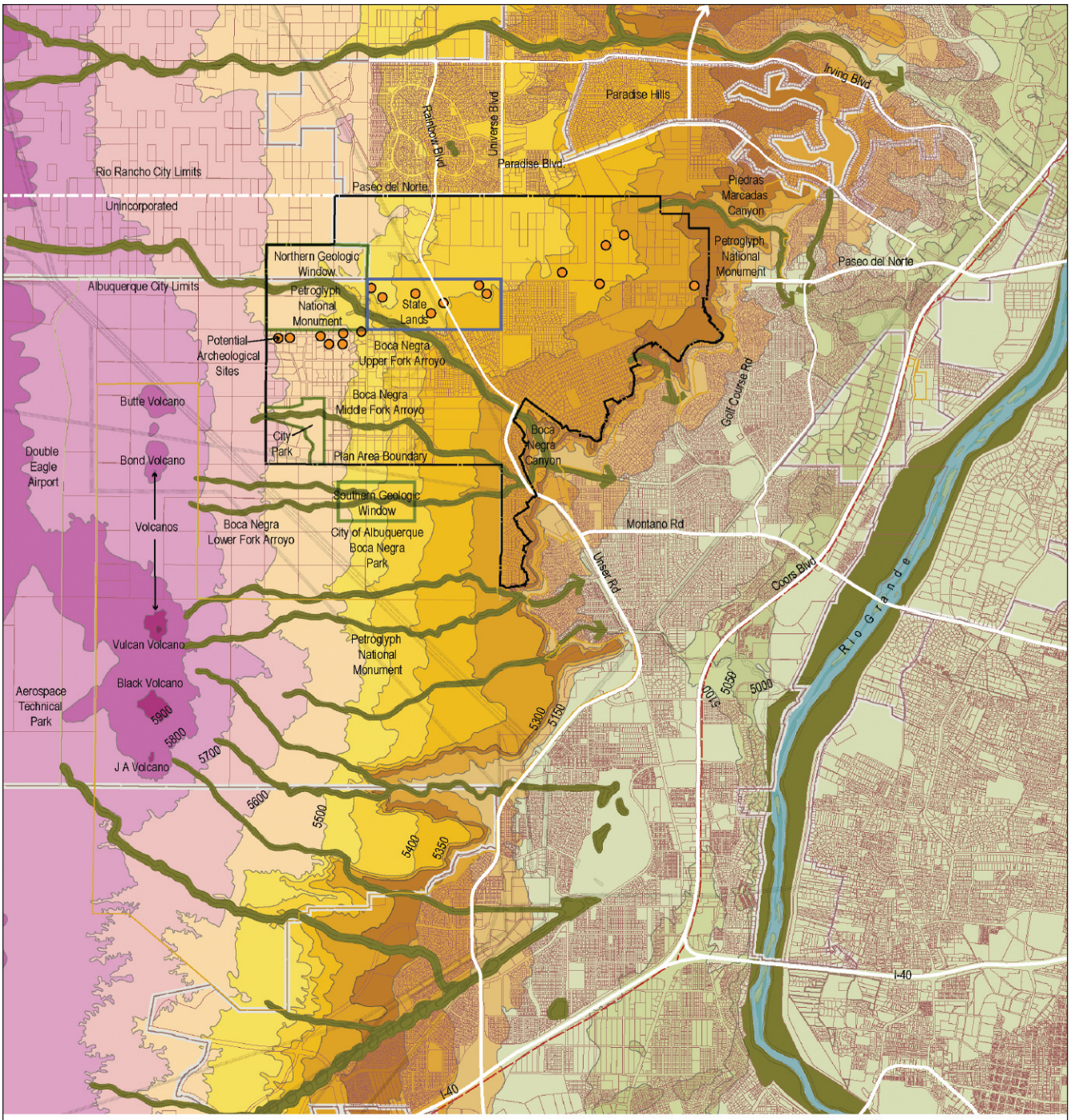
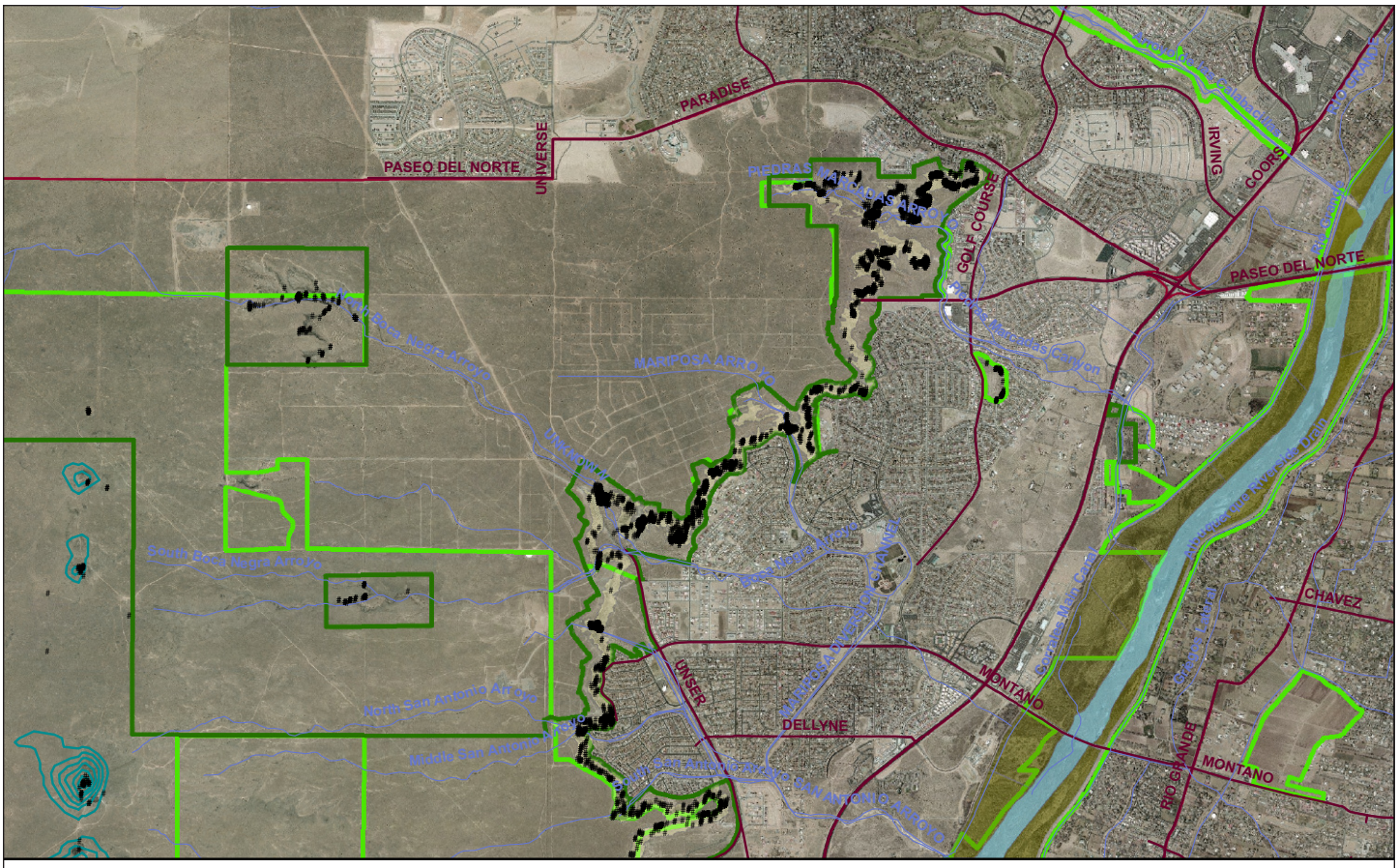

Rio Rancho City Limits
Unincorporated
Albuquerque City Limits
Rainbow Blvd
Universe Blvd
Paradise Blvd
Paradise Hills
Irving Blvd
Paseo del Norte
Piedras Marcadas Canyon
Petroglyph National Monument
Northern Geologic Window
Petroglyph National Monument
State Lands
Potential Archeological Sites
Boca Negra Upper Fork Arroyo
Boca Negra Middle Fork Arroyo
City Park
Plan Area Boundary
Boca Negra Canyon
Golf Course Rd
Butte Volcano
Bond Volcano
Double Eagle Airport
Volcanos
Boca Negra Lower Fork Arroyo
Southern Geologic Window
City of Albuquerque Boca Negra Park
Montano Rd
Unser Rd
Coors Blvd
Rio Grande
Vulcan Volcano
Black Volcano
Aerospace Technical Park
J A Volcano
Petroglyph National Monument
5900
5800
5700
5600
5500
5400
5350
5300
5150
5100
5050
5000
I-40
I-40
LEGEND
City Limits
Plan Area Boundary
Petroglyph National Monument
Drainage
Utilities
Archeological Sites
(dots represent NPS data, additional study needed)
Slopes over 8%
Natural and Cultural Features
May 2, 2006
N

Exhibit 4



Petroglyphs

Volcano Heights
City of Albuquerque
City Council Services

Legend

- Petroglyph Sites
- Volcano
- Stream
- Escarpment
- Rio Grande
- Present-day Bosque
- City Open Space
- Petroglyph National Monument

0 0.25 0.5 1 2 Miles

Exhibit 5

places of the gods, the deceased, water, breath, transformation, and more. Along the Rio Grande, the West Mesa's Volcanic cones, the Escarpment, the Sandia Mountains and more distant mountains were the periphery of the former Pueblos' world. (Anschuetz, 3.3, 3.8, 3.14)

Plazas

Plazas physically express the Pueblos' center and open the villages to the landscape. Pueblo people channel blessings across the landscape through shrines and special places, and the blessings intersect with the upper and lower worlds, where they are transformed and gain increased power. As they return to the people, these strengthened blessings renew the cycle of life from the plaza center. (Anschuetz, 3.8-3.12) **See Figure 1** ***Pueblo View*** *(3.13)*

The Sandia Mountains

On one edge of the bowl that forms the Pueblo World, the Sandias are the home for important shrines and the highest earth spirits, who protect the communities below and visit the West Mesa lava bed. (Anschuetz, 3.21-22)

Pathways

Trails connecting former villages along the Rio Grande with each other ran up the valley slopes and Escarpment, past the petroglyphs and shrines, to the volcanoes and mountains beyond. The trails were used for hunting, gathering, agricultural, and traditional and cultural activities. Because in Pueblo life, there is little separation of the functional from the spiritual, the paths form an interrelated flow of energy and movement along the trails that can be considered a ritual pilgrimage. (Anschuetz, 3.31, 3.33-34). **Exhibit 6** ***Paths*** illustrates many of the paths in and around the Volcano Heights area so the reader may visualize the petroglyph concentrations on the Escarpment paths such as along the Boca Negra and the Piedras Marcadas arroyos that lead to the volcanic cones.

Significance

Together, the elements described above constitute a world view that symbolizes a transformative healing process emanating from the West Mesa. In Pueblo terms, this is a significant place for reestablishing harmony with the environment, one another, and the spiritual dimensions of life. Pueblo members, at the hearing to designate the Monument, said: "We pray for peace, good health, harmony among all people, and a long and happy life." (Anschuetz, 3.45-46)

In terms of the Volcano Heights planning process and of the area's future, Pueblo members have recognized that change is part of life, but "it has to be transformed in terms of continuing," through "respect, connectedness—which is love." (Anschuetz, 3.15). The Volcano Heights Plan respects this intent in the following ways:

- Expanding the narrow edge of the Escarpment to allow more reflective space at a greater distance from the built environment;
- Maintaining the travel paths along the arroyo courses from the Pueblo sites on the Rio Grande valley floor, through the Escarpment, the Monument's North and Middle Geologic Windows, and to the Volcanic cones;

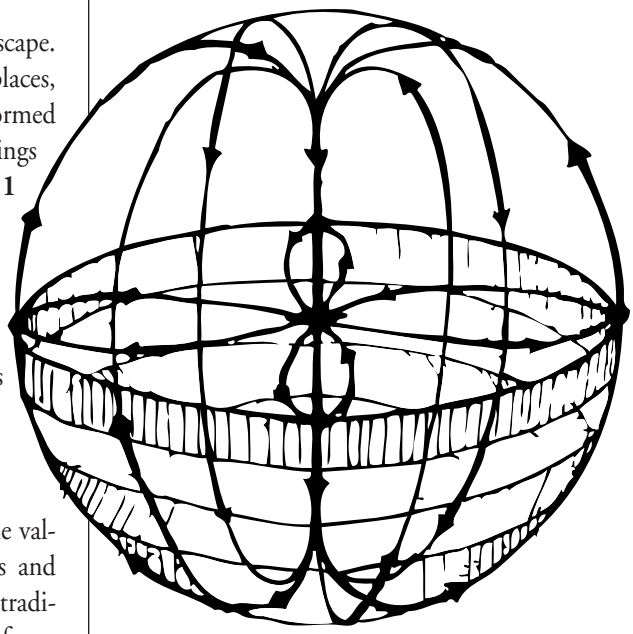
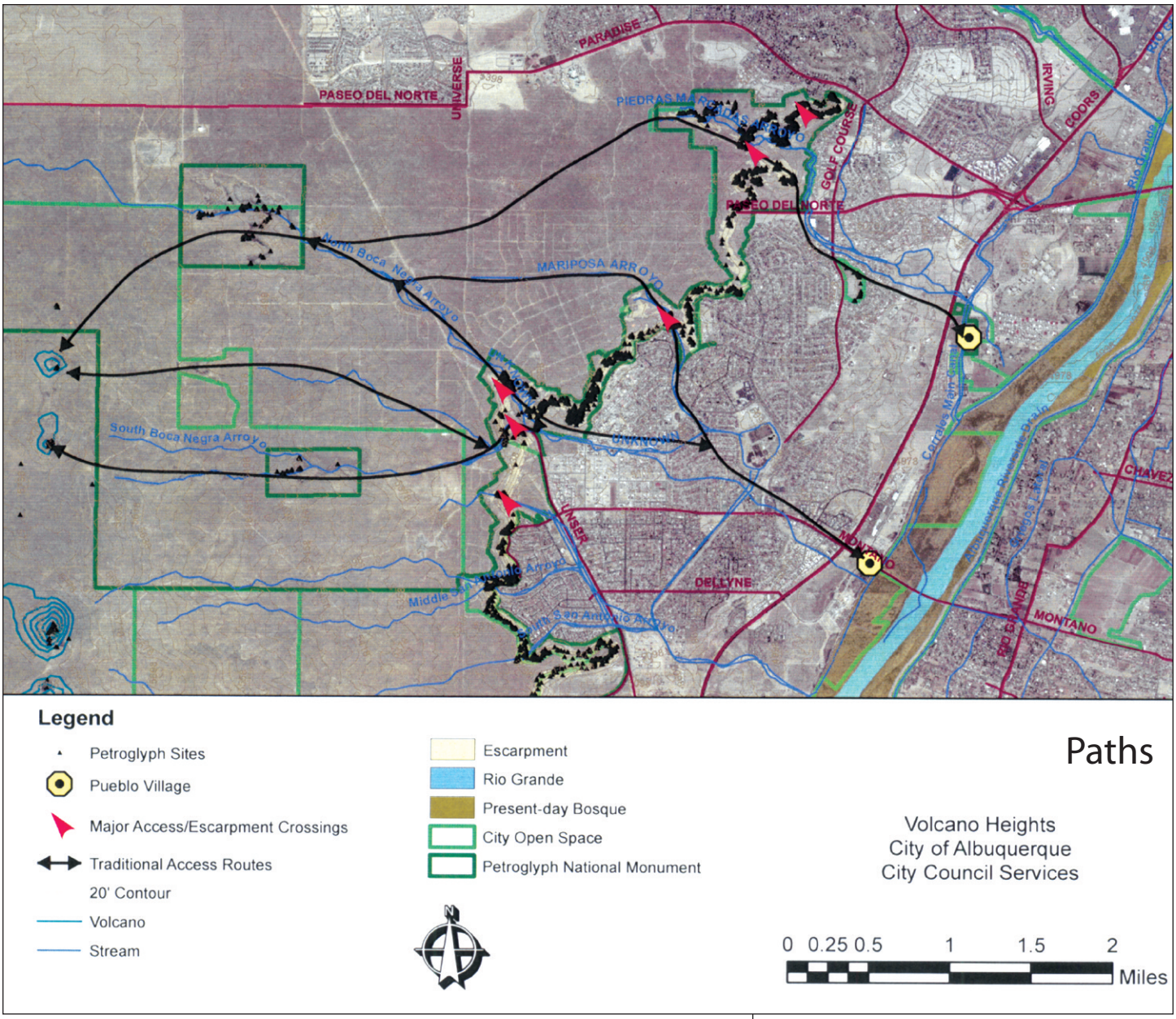


Figure 1
Pueblo View

The movement of life energy throughout the realms of the Pueblo world . (from W entzell 1990a: Figure 3-5).



- Protecting view sheds from the North Geologic Window and the cones of the northern most Volcanoes to the Sandia Mountains and the Rio Grande;
- Providing ample open space, particularly in the developed areas on the west side of the Plan Area
- Including a plant list for the open space and conservation areas drawn from native species in the area;
- Encouraging adequate jobs-housing balance and enhanced opportunities for walking, biking, lanes set aside for High Occupancy Vehicles (HOV), and transit trips to reduce congestion and pollution;
- Establishing plazas that focus the active life of the community, including young people in school.

Exhibit 6
Paths

These are included in the Plan not just because they reflect traditional values, but also because they incorporate good planning principles.

The Volcano Heights Plan will only succeed through resident and user acceptance of the principles guiding it. Celestino Gachupin of Zia Pueblo has said: "The petroglyphs… belong to all of us now, not only the native people, … the individual family that has a home that abuts the monument …you are our eyes and ears now, as far as ensuring that nothing bad happens to the place." All must become caretakers, recognizing and understanding the importance of the place to all people, and respecting it. Volcano Heights should continue to be a healing place for the entire community, encouraging better balance with the environment and with one another.

3. Treatment of Natural Features

Drainage channels

The Monument and affiliated City open space create a major natural ecosystem for Albuquerque. At the heart of the ecosystem are the Boca Negra/Mariposa arroyos, making up a 21 square-mile watershed. **Exhibit 7** ***Parks and Natural Drainages*** shows the natural arroyos and drainage systems traversing the area. The watershed is generally bounded by the Calabacillas Arroyo basin on the north and the San Antonio arroyo basin on the south. The developed watershed channel extends to a small area below the escarpment and into the Mariposa Detention Basin.

The AMAFCA master plan for stormwater drainage provides for a regional detention basin at Unser and Universe, but does not detail all stormwater facilities. **Exhibit 8** ***Stormwater Infrastructure*** shows the constructed drainage facilities. While some of the area's stormwater runoff will need to flow to engineered pipes and channels, some parts of the different Boca Negra arroyos courses can continue to act as natural drainage facilities. The arroyos may function as stormwater facilities so long as the preserved swath is wide enough to carry 100-year flows. In addition, AMAFCA requires management and maintenance of the arroyos so that no alterations reduce the flow capacity the arroyos have been planned to carry.

Drainage channels have played an important cultural role for prehistoric communities, connecting ceremonial sites on the volcanic mesa through the Escarpment to former Pueblo villages along the Rio Grande.

While the key geologic and cultural features have been set aside as public open space, urbanization around these wilderness areas will dramatically change them. Urbanization that disconnects or destroys the interconnected arroyos and rivers reduces the viability of plant and animal species. Preserving the arroyos not only maintains the richest habitat, but also the very features that ecologically link the largest expanses of open space to each other. To the east, the ecosystem is largely cut off in Taylor Ranch. However, to the west, the opportunity still remains to link the ecosystem to the Rio Puerco wilderness.

The open space that exists within and adjacent to the study area is not consolidated into an overall connected and consolidated network. Under current plans, drainage channels are not being used to their potential as walking and biking trails that could link the natural open areas**.**

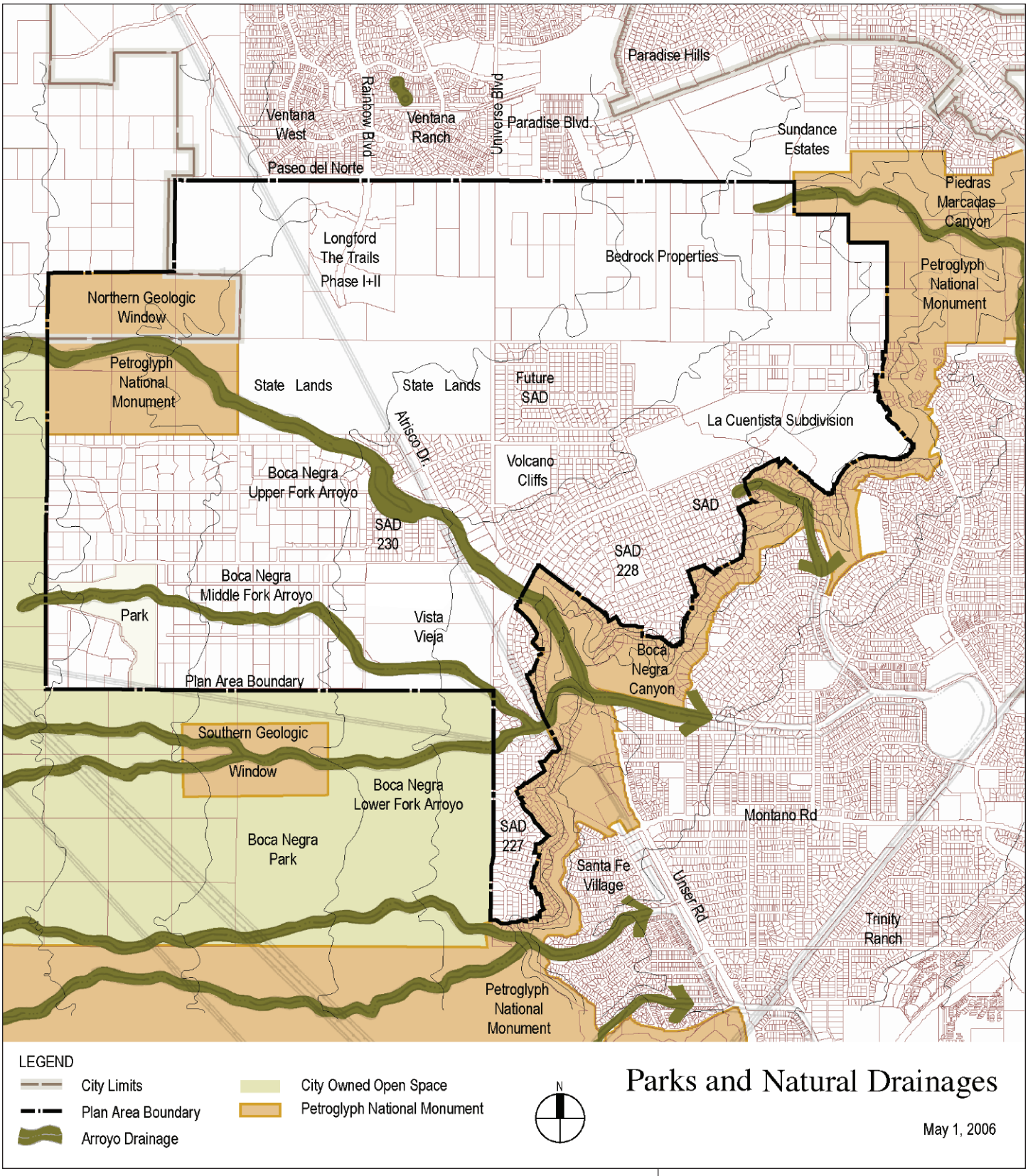

Paradise Hills
Ventana West
Rainbow Blvd
Ventana Ranch
Universe Blvd
Paradise Blvd.
Sundance Estates
Paseo del Norte
Piedras Marcadas Canyon
Longford The Trails Phase I+II
Bedrock Properties
Petroglyph National Monument
Northern Geologic Window
Petroglyph National Monument
State Lands
State Lands
Future SAD
Atrisco Dr.
La Cuentista Subdivision
Volcano Cliffs
Boca Negra Upper Fork Arroyo
SAD
SAD 230
SAD 228
Boca Negra Middle Fork Arroyo
Park
Vista Vieja
Boca Negra Canyon
Plan Area Boundary
Southern Geologic Window
Boca Negra Lower Fork Arroyo
Montano Rd
SAD 227
Boca Negra Park
Santa Fe Village
Unser Rd
Trinity Ranch
Petroglyph National Monument
LEGEND
City Limits
Plan Area Boundary
Arroyo Drainage
City Owned Open Space
Petroglyph National Monument
N
Parks and Natural Drainages
May 1, 2006

Exhibit 7

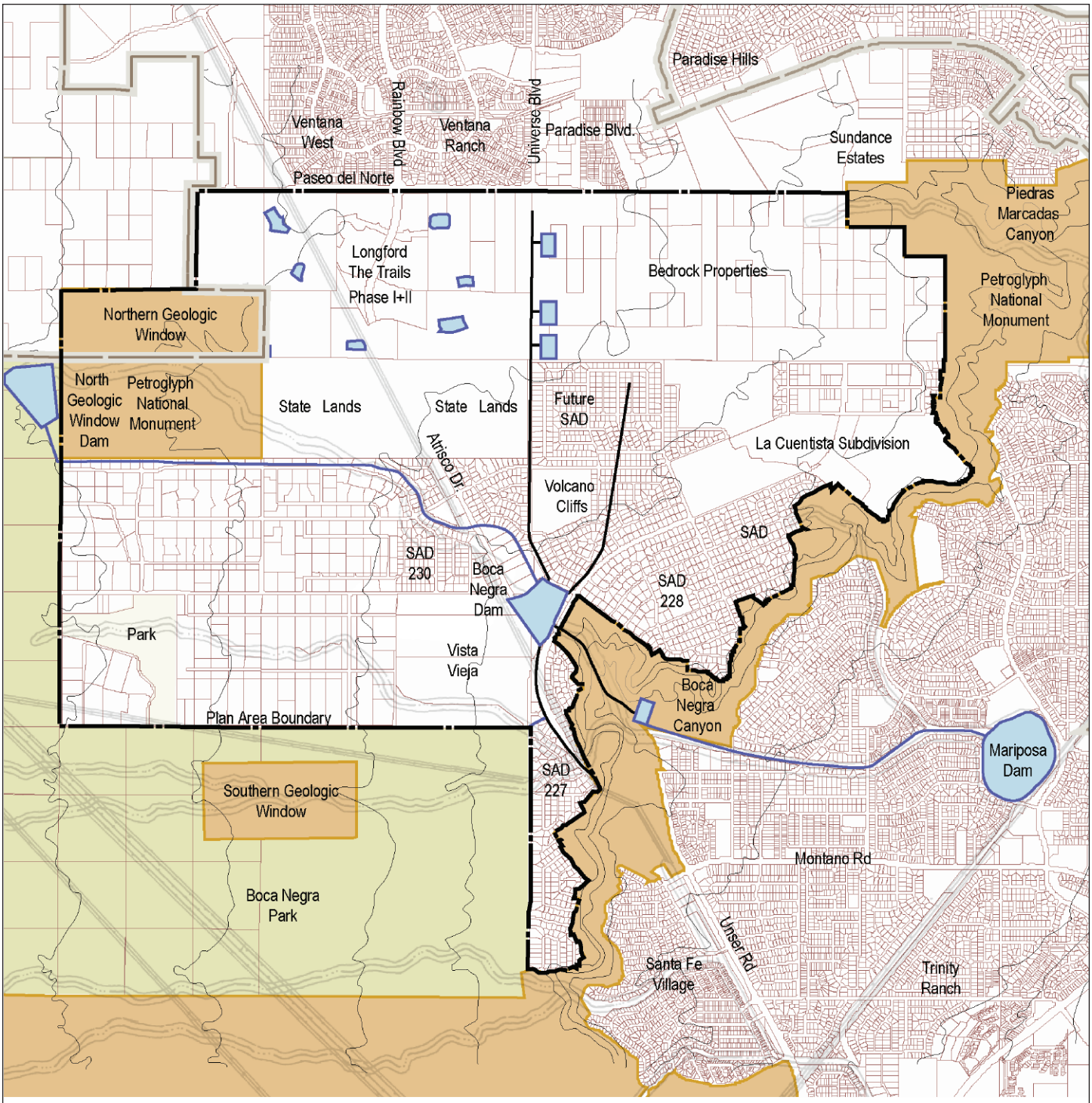

Paradise Hills
Ventana West
Rainbow Blvd
Ventana Ranch
Universe Blvd
Paradise Blvd.
Sundance Estates
Paseo del Norte
Piedras Marcadas Canyon
Longford The Trails Phase I+II
Bedrock Properties
Petroglyph National Monument
Northern Geologic Window
North Geologic Window Dam
Petroglyph National Monument
State Lands
State Lands
Future SAD
La Cuentista Subdivision
Arrisco Dr.
Volcano Cliffs
SAD
SAD 230
Boca Negra Dam
SAD 228
Park
Vista Vieja
Boca Negra Canyon
Mariposa Dam
Plan Area Boundary
SAD 227
Southern Geologic Window
Montano Rd
Boca Negra Park
Unser Rd
Santa Fe Village
Trinity Ranch
LEGEND
City Limits
Plan Area Boundary
Dam or Pond
Improved Channels
Storm Drains
City Owned Open Space
Petroglyph National Monument
N
Stormwater Infrastructure
May 1, 2006

Exhibit 8

Open Space Edge Treatment

The Monument has miles of edge and adjacent private lands are in a natural state. Currently people access the open space anywhere along the edge and can take in exceptional views of the volcanoes, the Rio Grande valley and the Sandia Mountains, much as people have done for thousands of years. New development could block this physical access and the views, greatly reducing the value of the open space amenity to the public at-large. The open space is best preserved as a public amenity by designing scenic trails and roads along open space edges. Design standards for developments built adjacent to the open space edge will help to achieve visual harmony with the high desert landscape.

4. Platting and Zoning

Between the northernmost volcanoes and the escarpment lie approximately 1700 small vacant lots in a subdivision platted in the 1960s known as "Volcano Cliffs." These lots were sold to individual investors during the 1960s and '70s according to a 1967 master plan, and in 1981 the City annexed the Volcano Cliffs subdivision. Approximately 1400 of these lots are under 1 acre in size.

The Plan Area, consisting of more than 3500 acres, is zoned almost entirely for single-family development (R1 and RD) at average suburban densities of 5 dwelling units per acre. R1 is the underlying zoning for Established Urban areas designated in the Comprehensive Plan and RD is the underlying zoning for Developing Urban areas. (See **Exhibit 9 *Comprehensive Plan Designations & Zoning*.** Re-zoning from R1 or RD to RLT is often sought by single-family residential developers in order to obtain more flexibility in lot sizes and greater density. For the RD zone, townhomes are permitted if a site development plan is approved by the Planning Director. Inclusion of multi-family or commercial uses requires a full Sector Development Plan, but the amount of commercial cannot exceed 15% of the RD zone covered by the Sector Plan.

5. Water Utilities

Many small landowners in the Volcano Cliffs subdivision have held their property for 30-40 years, relying on platting executed in 1967 and anticipating that the City of Albuquerque would provide services. However, the basalt layer covering the volcanic Escarpment and the expense of extending utilities above the Escarpment have until now discouraged the area's development.

The City of Albuquerque in its 1997 Decade Plan identified a need and intention to construct a water pump station and associated transmission line to provide water service to areas identified as Volcano Trunk Zones 3WR/4W. (See **Exhibit 10 *Water Pressure Zones***) In 1998, the city approved a development agreement (EC-35) that authorized a water pump station to be constructed above the Escarpment. The pump station was paid for by property owners, to be reimbursed with enterprise fund development fees over time as other projects are connected. EC-35 set conditions and requirements to be met by future developers in order to receive water services through connection to the pump station.

Construction of the water facility has provided water availability to serve development in the Volcano Cliffs area. According to a 2003 design analysis performed by Wilson

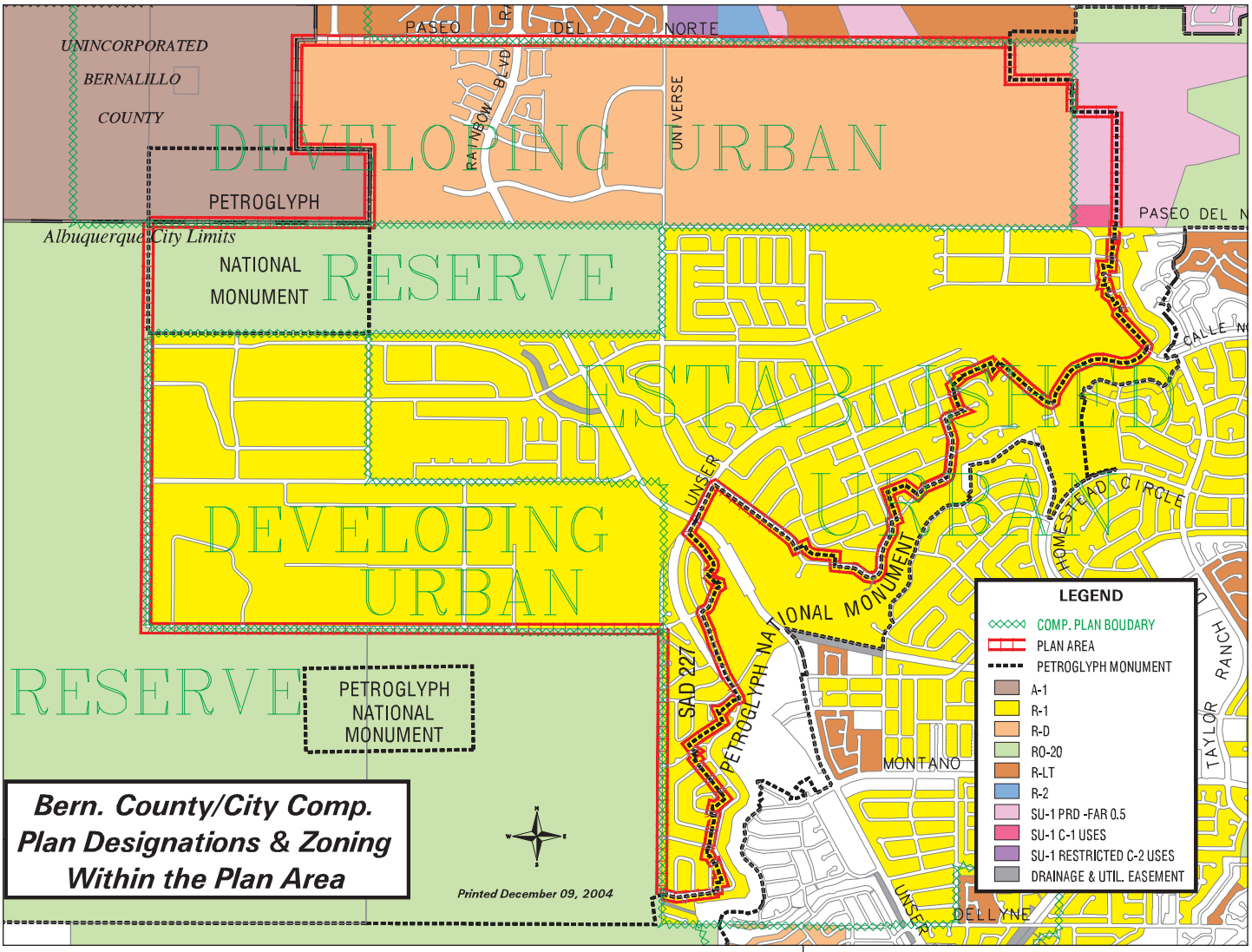


Exhibit 9
Comprehensive Plan Designations and Zoning

& Company, expansion of the existing pressurized system (closed loop system) installed pursuant to the 1998 agreement can serve up to 5,200 dwelling units above the escarpment, with 2,800 units for zone 3WR and 2,400 units for Zone 4W. Pressure reduction valves are required for the units in 3WR. (The decision to connect the planned Volcano Height high school will reduce the number of dwellings that can receive water service.)

According to the Albuquerque/ Bernalillo County Water Authority's Utility Development Section, the closed loop 4W/3WR system should be considered as a temporary interim system until the Water Authority can construct a permanent 4W/3WR reservoir in accordance with the Water Master Plan. At such time that approximately 3000 dwelling units have been developed, the amount of utility charges collected and contributions from development agreements should be adequate to fund the reservoir. The pump station and closed loop system will serve the entire 5200 units, but its energy use will be high and not very cost effective. With the reservoir, the cost of pumping will be reduced.

In order for urban services to be provided in Zone 5w, another pump station will be needed to create a pressurized system in that zone.

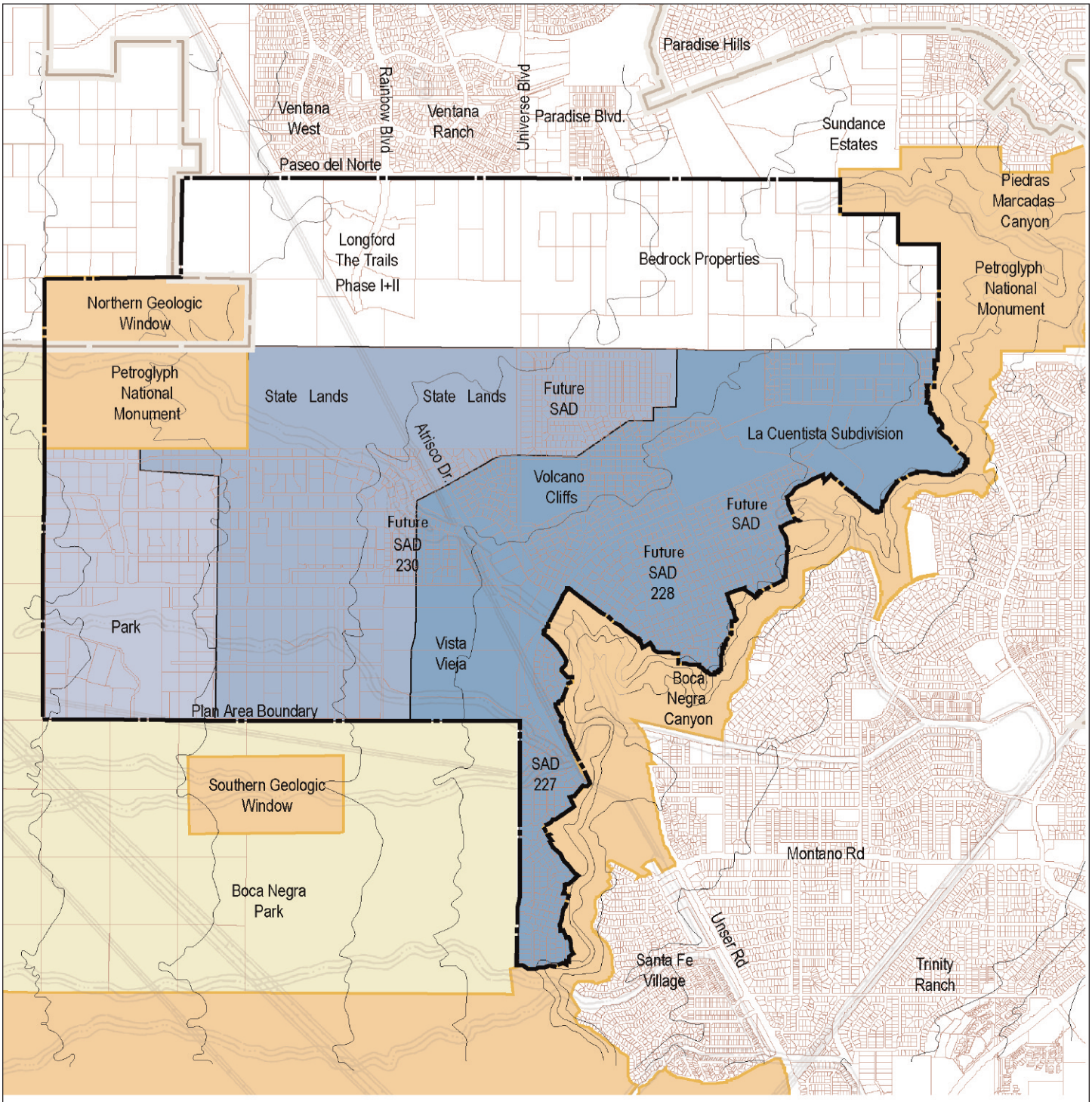

Paradise Hills
Ventana West
Rainbow Blvd
Ventana Ranch
Universe Blvd
Paradise Blvd.
Sundance Estates
Paseo del Norte
Piedras Marcadas Canyon
Longford The Trails Phase I+II
Bedrock Properties
Petroglyph National Monument
Northern Geologic Window
Petroglyph National Monument
State Lands
State Lands
Future SAD
Atrisco Dr.
La Cuentista Subdivision
Volcano Cliffs
Future SAD
Future SAD 230
Future SAD 228
Park
Vista Vieja
Boca Negra Canyon
Plan Area Boundary
SAD 227
Southern Geologic Window
Montano Rd
Boca Negra Park
Unser Rd
Santa Fe Village
Trinity Ranch
LEGEND
City Limits
Plan Area Boundary
Water Pressure Zone 5W
Water Pressure Zone 4W
Water Pressure Zone 3WR
City Owned Open Space
Petroglyph National Monument
N
Water Pressure Zones
May 1, 2006

Exhibit 10

New Mexico Utilities, a privately owned utility company, provides water service and wastewater collection to the large Longford Homes subdivision now being developed south of Paseo del Norte and to other areas north of the service boundary of the Albuquerque/ Bernalillo County Water Authority.

6. Development Trends

The promise of water service has enabled property owners and developers to begin the development process pursuant to current residential zoning. Recently, small property owners have begun to cooperate in assembling land for subdivisions, paying over time for local infrastructure—roads, water, sewer and hydrology service—through special assessments. In 2002 property owners petitioned and formed SAD 227 and development is beginning in Units 2, 5 and 24. Property owners are interested in continuing the process of private assembly to create additional SADs for areas within the Volcano Cliffs subdivision north of SAD 227.

In many other areas developers are actively acquiring contiguous tracts and developing master plans. Longford Homes, Vista Vieja and La Cuentista are examples of subdivisions approved or in the approval process with the City of Albuquerque. The La Ventana subdivision is in the development review process with Bernalillo County.

Table 1 Trend Scenario Assumptions show that the expected total build-out for the plan area under current zoning, including the four subdivisions, the individual platted lots and the commercial areas adjacent to Paseo del Norte and Unser, is roughly 12,000 dwelling units.

Of the 3,800 dwelling units planned for current subdivisions, 2,700 are already "in the pipeline" with vested development rights, according to the City of Albuquerque, and are exempt from development moratoriums. *(*See Exhibit 2 *Built and Approved Projects*) A population of over 30,000 residents within the plan area is projected under current zoning.

Table 1
Trend Scenario Assumptions* *(All figures are approximate)*

Use	Average Gross Density	Dwelling Units
Current Subdivisions	4.5 du/ac	3,800
Volcano Cliffs Lots under 1 acre		1,400
Mixed Use (new)	12 du/ ac	1,700
Urban Residential (new)	12 du/ ac	2,300
Suburban Residential (new)	4.5 du/ac	2,800
Total Units		12,000

*Source: Taecker UDP

Adjacent development

Directly to the northwest lies Quail Ranch, a major development currently within the City of Rio Rancho. Zoning for Quail Ranch consists of approximately 53% single-family residential (3.5-6 DU/ acre), 5% estate residential (1 DU/acre,) 4% multi-family residential (20 DU/acre), 15% commercial and light manufacturing, 15% open space, and 8% public facilities. The future development of Quail Ranch and the current and future development of Ventana Ranch together result in approximately 75,000 additional residents, for a total population of 105,000 within and directly impacting the plan area.

Considerations

Single-family residential subdivisions are the pattern for new development in the study area. Not only is there an immediate market for homes, the current single-use residential zoning prohibits integrating a mix of other uses which could make neighborhoods more walkable and convenient (e.g. neighborhood services) by requiring an extra step in the city approval process—preparation of a sector plan for anything other than suburban residential development. Under the current zoning, it is certain that a desirable jobs/ housing balance will not be achieved.

Assuming a workforce need of 1.25 jobs per dwelling means a deficit of 13,000 jobs within the Plan Area under current trends. (*See Table 2)* Including the major Quail Ranch and Ventana West developments to the northwest, which are zoned for approximately 23,500 jobs, there is still a deficit of around 24,000 additional jobs needed to provide an adequate job base serving the anticipated population of the plan area and vicinity.

Table 2 Employment Deficits Under Different Alternatives

(All figures are approximate)

	Units	Population	Workforce need 1.25/unit	Jobs provided	Job deficit or Surplus	Commercial sq ft
PIPELINE PROJECTS	2,700					
Plan Alternatives*						
TREND	12,000	30,000	15,000	2,000	(13,000)	1,000,000
TOWN CENTER	12,000	30,000	15,000	18,000	+3,000	5,000,000
VILLAGE	8,000	20,000	10,000	500	(9,500)	350,000
Impact Projects NW of Plan Area						
VENTANA RANCH	5,000	13,000	6,000	500	(5,500)	na
QUAIL RANCH	23,000	62,000	29,000	23,000	(6,000)	na
NW Totals	28,200	75,600	35,000	23,500	(11,500)	
TREND TOTALS for Plan Area and Vicinity	40,200	105,600	50,000	25,500	(24,500)	

*** The Alternatives are described in III Planning Process, 2 Land Use Scenarios below.**

Build-out exclusively with single-family residential subdivisions will increase jobs/ housing imbalances on the West Side, adding to traffic demands and increasing the burden on West Side and east-west transportation systems. Without adequate provision of employment, greater trip internalization, and more emphasis on transit-supportive land uses and road systems on the West Side, traffic congestion and demand for expanded river crossings will increase.

7. Transportation and Transit

Portions of Unser Boulevard, Atrisco Drive, Universe and the western segment of Paseo del Norte (PdN) are the only primary paved roads presently serving the Plan Area. Major roadway improvements are anticipated by the Albuquerque Metropolitan Planning Area's (AMPA's) *Long Range Roadway System* shown on **Exhibit 11**. _Most notably, extensions to Unser Boulevard and Paseo del Norte (PdN) are planned for completion by 2010. AMPA defines Unser and PdN as "Limited Access Roadways" designed to carry high volumes of regional traffic. To maintain travel speeds, intersection spacing would be restricted. Construction on the segment of Unser that moves up the Escarpment from the south has been completed.

Increasing regional traffic demands have occurred against a backdrop of rapid suburban growth and increasing travel. In 1970, per capita vehicle-miles traveled were 12.4 miles per day (per AMPA); by 2000, per capita vehicle-miles had increased to 20.9 miles per day – an increase of 69%. As seen in other metropolitan areas, much of this increase in car travel is attributable to spreading low-density growth, where destinations are spread farther out and walking to destinations is increasingly difficult.

Regional impacts

Transportation impacts from Volcano Heights development have raised concern among public decision-makers, government agencies, and citizens. The West Side arterial network is strained, with points of frequent congestion on Coors Boulevard, the only continuous north-south arterial currently built west of the Rio Grande. Congestion has increased on many river crossings, most notably on Montano. Many workers on the West Side must commute to job centers east of the river.

City and regional transportation planners are looking to the planned extensions of Unser and Paseo del Norte (PdN) to alleviate congestion on the West Side, although arterial connections will remain constrained at the Rio Grande and across the Monument Escarpment. Near the plan area, Albuquerque, Rio Rancho and Bernalillo County have approved many projects that are moving forward. Low density, single-family residences dominate nearly all of this new growth. Little employment growth has been planned, further contributing to an imbalance of jobs and housing on the West Side, and even greater pressures on the road system.

Transit

Coors Boulevard is designated as the main West Side corridor for High Capacity Transit on the MRCOG ***Long Range High Capacity Transit System*** map (**Exhibit 12**). The Albuquerque-Bernalillo County Centers and Corridors Plan shows Unser as an Express Corridor appropriate for limited stop service from Rio Bravo to MacMahon north of the Plan Area. This regional plan designates Unser as a major north-south route, ultimately connecting I-40 to Rio Rancho on the north. The MRCOG Plan designates Coors Blvd. for Hyigh Capacity Transit. The Volcano Heights Plan calls for amendment of these regional plans to provide more detail on high capacity transit routes.

City and regional transportation authorities are considering the establishment of a network of Bus Rapid Transit (BRT) and/or Rapid Bus routes. BRT routes leave open the flexibility of evolving to dedicated lines for Light Rail in the future. Both BRT and

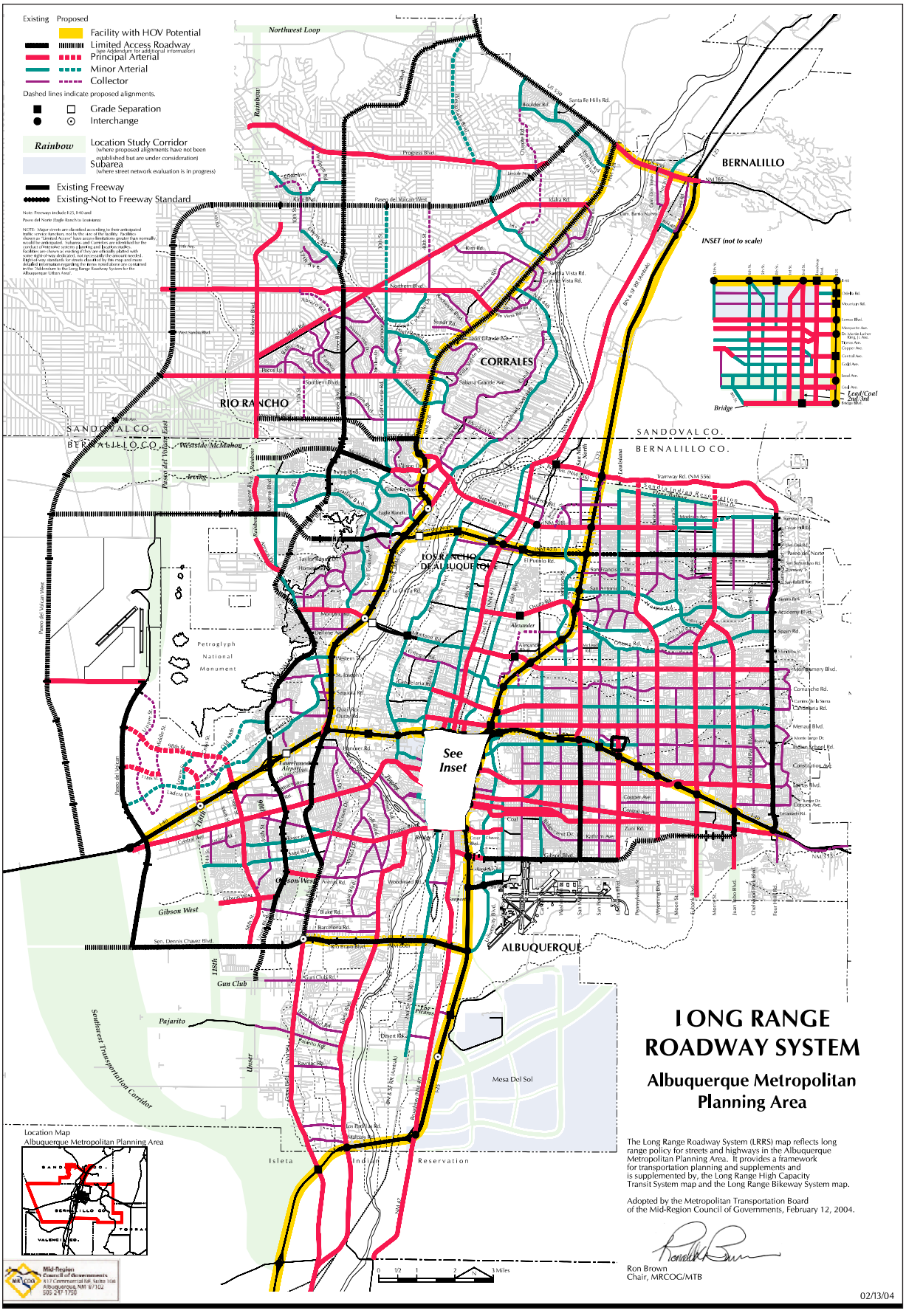
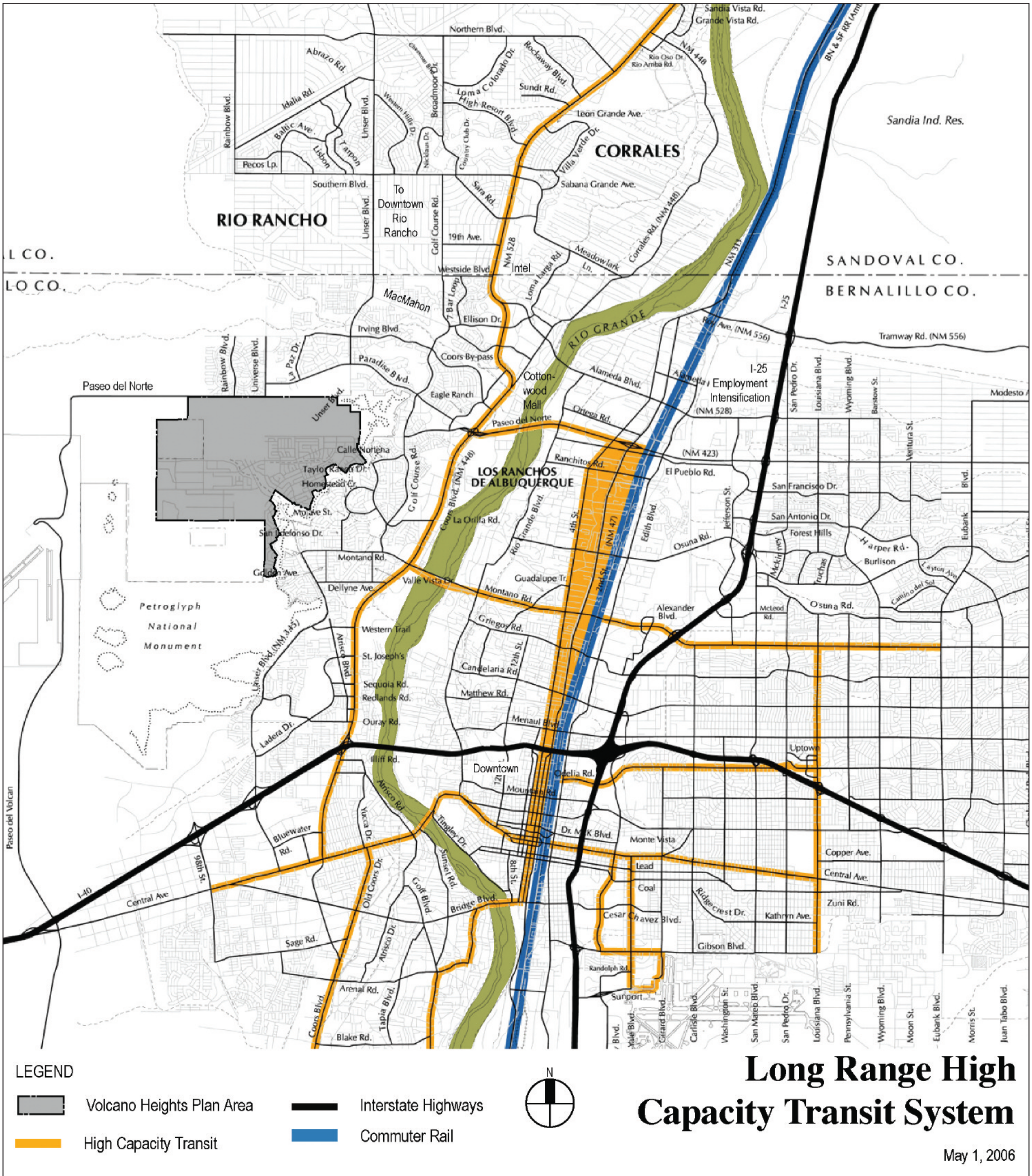


Exhibit 11
Long Range Roadway System



Long Range High Capacity Transit System

May 1, 2006

Exhibit 12

Rapid Bus seek to improve transit travel times to make transit a convenient, sometimes faster, alternative to travel by car. Both BRT and Rapid Bus rely on "signal preemption" that quickly provides buses with a green light at intersections. They also focus on ways to speed boarding by pre-paying fares and platform/ bus designs. BRT also provides dedicated lanes for buses and carpoolers, which allow buses to bypass congested traffic, whereas Rapid Bus service mixes with regular traffic. While supportive of the concept, City and regional transportation authorities have not developed guidelines for roadways with dedicated BRT lanes.

II

Land Use Plans and Policies

(See *Appendix 1* in the *Volcano Heights Planning Study Report* for a more detailed review of existing policies).

The following land use plans and policies govern development in the Plan Area

Rank 1	Albuquerque-Bernalillo County Comprehensive Plan (CP) Albuquerque Planned Growth Strategy (PGS)
Rank 2	West Side Strategic Plan (WSSP)
Rank 3	Northwest Mesa Escarpment Plan (NWMEP)
Other	Executive Communication (EC-35)

Applicable policies can be summarized as follows:

- New development may occur where vacant land is contiguous to existing or programmed urban facilities (CP)
- Service extensions for areas with multiple ownership and premature platting only when there is reassembly or sector plans provided (CP)
- Criteria for designation of new activity centers that include transit service potential, fiscal impact, capacity of public services, market potential, potential for shaping the built environment (CP, WSSP)
- Design controls to protect the escarpment, archeological and other resources through controls on height, runoff, color and materials (NWMEP)
- Preservation of views to and from the volcanic escarpment through setback, height and building massing limits (WSSP)
- In the Volcano Cliffs area, the City shall encourage assembly of lots of multiple owners, cluster housing to provide more open space and efficient provision of utilities, use of xeriscape landscaping and other water conservation techniques; to be encouraged through provision of master plan infrastructure prior to normal extension of infrastructure in Priority 2 areas when cost of infrastructure is exceptionally low to the City and in a way that avoids scattered site development in adjoining areas (WSSP)
- Orderly, efficient (from the standpoint of urban infrastructure), and environmentally sensitive development of the Volcano Cliffs are through planning approvals and infrastructure extension determinations (WSSP)
- Criteria for provision of water service include minimum of 100 acres assembly, adequate street network, 30% (not private) common open space, clustering of housing, xeriscape and water conservation as determined by the City Council (EC35).

III
Planning Process

1. Coordination With Land Owners and Agencies

The Planning Management Team included the City Council Office and the Planning Department. The Planning Team consisted of land use, architectural, urban design, open space, transportation and planning consultants.

The Planning Team gathered extensive information on plans for public infrastructure, including drainage, water and transportation systems, and on land use plans and policies. The team held interviews with the Albuquerque Metropolitan Area Flood Control Authority (AMAFCA), Albuquerque Public Schools, the City-County Water Authority, the Mid Region Council of Governments (MRCOG), economic development agencies, and City Transportation, Planning, Parks and Recreation, and Transit departments and held a series of coordination sessions in September 2005. In addition, an interview was held with Rio Rancho officials regarding the redevelopment and land assembly process that Rio Rancho has used to facilitate development in areas of obsolete plats. (See *Appendix* of the *Volcano Heights Planning Study.*)

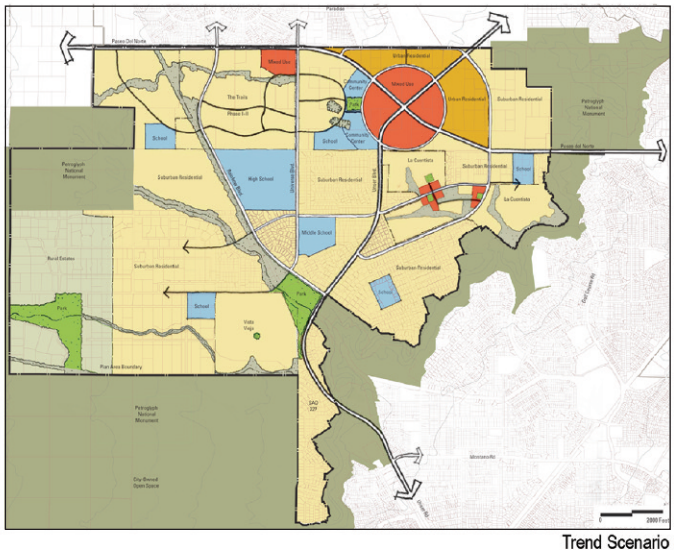
Interviews with the National Park Service, City Open Space staff, and State officials provided information on the Petroglyph National Monument and other open space needs. The team interviewed experts knowledgeable regarding the area's archeology, anthropology and Hispanic and Native American history to understand the cultural background of the area.

Private Development Plans

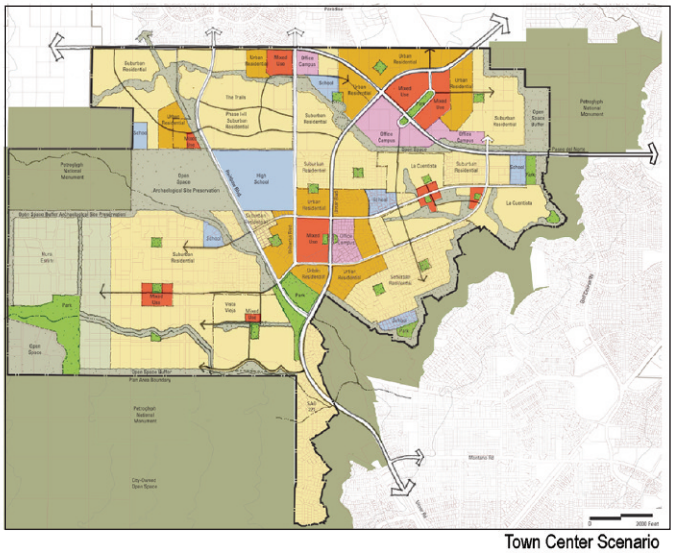
In September and October of 2004, the meetings and interviews with City and County planning staff, developers, and property owners yielded information on the current status of development plans. Discussions with the developers of Vista Vieja subdivision occurred throughout the planning process, resulting in adjustments to their master plan that added a hiking and bicycle trail, a central plaza, other "walk-to" amenities, and greater variety of housing types. Similarly the team met with representatives of Longford Homes and La Cuentista subdivisions and held interviews with representatives of SAD 227 and the Volcano Cliffs Property Owners Association.

2. Land Use Scenarios

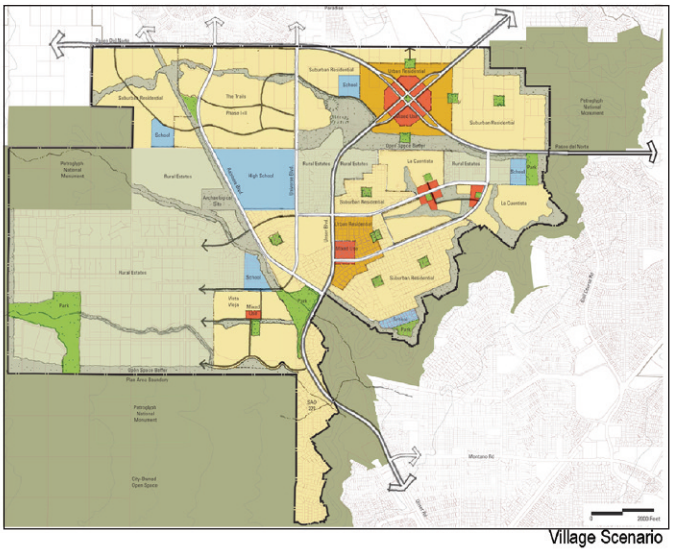
Based on analysis of information gained through interviews, agency meetings, and collection of materials, in December of 2004 the team prepared three scenarios that explored different ways to develop. (See **Exhibit 13 *Comparisons of Initial Scenarios***)



Trend Scenario



Town Center Scenario



Village Scenario

Comparison of Scenarios

Volcano Heights,
City of Albuquerque,
New Mexico

January, 2005

Comparison of Initial Scenarios

All figures are approximate.

Alternative	Dwelling Units	Population	Comm'l (Sq. Ft.)	Jobs
Trend	12,000	30,000	1,000,000	2,000
Town Center	12,000	30,000	6,500,000	20,000
Villages	8,000	20,000	350,000	500

LEGEND

- Town Center
- Village Center
- Urban Residential
- Suburban Residential
- Rural Residential
- Office Campus
- Schools
- Open Space/Buffer
- Petroglyph National Monument

Taecker Urban Design and Planning, LLC

Exhibit 13
Comparisons of Initial Scenarios

(1) Trend. This scenario assumed extension of current development patterns under present zoning to the undeveloped portions of the Plan Area. It illustrated projects that are in advanced and initial phases of development, along with application of similar suburban densities elsewhere in the Plan Area. Lots under 1 acre in the Volcano Cliffs area would remain as platted. Roughly 12,000 dwelling units and few jobs would result under this scenario.

(2) Village. This scenario emphasized protection of open space and cultural resources. Residential areas were organized around walkable villages with modest retail services. Substantial areas would remain rural in character. Roughly 8,000 dwelling units and few jobs would result under this scenario.

(3) Town Center. This scenario introduced a pedestrian-oriented town center at the Paseo del Norte-Unser intersection. Approximately 5,000,000 square feet of commercial and office space and approximately 20,000 jobs were initially assumed for the Town Center and Office Campus so that a mix of retail, entertainment and urban residential uses can be placed near each other at a location with excellent regional access. This scenario assumed the same number of dwelling units as under Trend (12,000 DUs) but offered more variety ranging from urban residential to rural estates. It organized development in a way that would allow adding critical land to the open space system.

3. Community Involvement Process

Design Workshops

The community process consisted of two major design workshops**.** The first, held in January 2005 and attended by over 150 people, provided opportunity for property owners, developers, civic and community participants to visualize how the area should develop.

After describing existing conditions, context and trends, the planning team presented the three alternative scenarios described above for consideration. Two days discussion and analysis followed, in which participants interacted with the professional planning team in small groups to analyze the pros and cons of the three scenarios. A modified version of the Town Center scenario was chosen as the preferred alternative. For more detail on this workshop, see the Planning Study Report, March 15, 2005.

Charrette Presentation, January, 2005

A second all-day planning workshop was held on October 13, 2005. The purpose was to inform community groups about the Volcano Heights draft Concept Plan and engage them in developing more detailed pedestrian, bicycle, transit, vehicular and land use solutions in a design session with the planning consultants. Groups participating

included the Transportation Forum, North Valley Coalition, 1000 Friends, Sierra Club, APS, and key agencies including City Transit Department, Municipal Development Department/Transportation, City Planning and MRCOG.

The workshop began with presentations on the planning framework including Centers and Corridors and Paseo del Norte (PdN) and Unser design requirements and access policy. Constraints on the plan include current transportation, zoning and utility policies and several development projects in the pipeline exempted from moratorium. Modifications to the population and land use assumptions of the Planned Growth Strategy and Metropolitan Transportation Plan are needed as well. Given these constraints, the plan for Volcano Heights presents an opportunity to create a sustainable growth pattern for this portion of the West Side.

Workshop participants discussed how the limited access policies for PdN and Unser affect street type, land use and pedestrian/transit-oriented design. Participants then broke into groups and worked with the consultants to draw their proposals for intersection treatment and transit and pedestrian connections. The Planning Team addressed these proposals by further exploring design standards for the Paseo and Unser intersection, analyzing a potential boulevard treatment, considering pedestrian/bicycle solutions across arterials, and modifying land use assumptions. The workshop led to a more detailed engineering study of intersection design and detailed modeling of the Concept Plan's impact on the West Side transportation network. (See Kimley-Horn Transportation Study in 4. below)

Presentations and Website comments

Placement of the Volcano Heights Planning Study Report on the City's website in March 2005 afforded a third means for the public and property owners to express their concerns. Comments were received through the volcanoheights@spinn.net e-mail link. Most responses expressed a desire to be kept informed on the plan and its schedule.

Presentations on the plan were made **to** stakeholder and community groups including the North Valley Coalition, neighborhood associations, the Volcano Cliffs Property Owners Association (VHPOA), Bedrock partners, and other major land owners.

Concerns and Issues

The community involvement process afforded opportunities for the planning team to hear from a large turnout of Volcano Cliffs Property Owners Association (VCPOA), other area property owners, developers active in the area, and from community groups. The following concerns and issues emerged to be addressed by the plan.

Property owner and developer issues:

- Desire for rapid implementation of the plan after years of waiting for development approval. Many property owners believe that the City of Albuquerque made commitments to provide utilities at property owner expense as a result of 1981 annexation and platting.
- Opposition to the magnitude of open space proposed in the plan unless open space funding is identified. Suggested funding sources are general fund, gross receipts tax, impact fees, or assessment with fair consideration of local versus citywide benefit.

- Requests for market feasibility studies for employment, mixed use and retail recommendations. Other employment opportunities at Double Eagle, Quail Ranch, Coors, Atrisco and Rio Rancho should be taken into consideration. Not all those who live in Volcano Heights will work there, and on-site employment should not be a condition of development.
- Development of Rural Estates with minimal city utilities for roads only, using shared water walls, environmentally friendly septic systems and allowance for minimum lot sizes under 10 acres.
- Concern that regulatory changes to zoning should not hold up the approval process
- Desire for agreement on phasing and sequencing schedule for development.
- Inter-agency agreements for joint use and co-location of schools, parks, recreation, libraries
- Desire to move the process along in a cooperative and timely manner through sector plans tied to Special Assessment Districts (SADs) and Public Improvement Districts (PIDs) using existing platting with voluntary assemblage

Community issues:

Transportation impacts and impacts of the Town Center scenario on traffic and bridge crossings emerged as a major concern in the second community workshop.

- Desire for additional open space for citywide view preservation and respect for cultural and ecological preservation
- Concern over exacerbating already existing infrastructure deficiencies on the West Side resulting from development
- Concern over capacity of the West Side transportation system to handle additional development in this location and potential east-west traffic impacts
- Request for Transportation and Transit Study to assess impact of the plan on regional system and land use relationships

If these owner and community issues can be addressed, participants in the design workshops supported creating a development character that is different than the rest of Albuquerque, that provides more choice in housing types, creates walkable communities, and offers a connected network of open space and trails. By focusing on comprehensive planning and quality design, participants saw that economic value, resource conservation, and broad city-wide benefits can be realized simultaneously. Next steps included development of design standards especially for town and village centers to define appropriate building scale, heights, and building forms with new zoning categories to accomplish the vision.

4. Transportation Studies

MRCOG Transportation Modeling

The Planning Team worked with the Mid Regional Council of Governments (MRCOG) to model the transportation impacts of the scenarios:

1) **Baseline** that assumes no development in Volcano Heights but where approved projects in the surrounding area are built.

2) **Trend** scenario where single-family densities that average 4.5 dwellings per gross area continue to prevail throughout the area, except near the intersection of Paseo del Norte and Unser where Bedrock Properties had retail and higher-density housing under consideration prior to this planning effort.

3) **Village** scenario, where development only occurs within the limits of existing water system, effectively down-zoning land beyond this zone.

4) **Town Center** scenario that brings about 18,000 new jobs to the West Side and places most jobs and housing within a short walk of retail conveniences and transit.

Additional analysis showed reduced travel (internalized) by land use scenario using assumptions based on mixed use and urban design criteria. Because of its balance of complementary land uses, the Town Center model assumed that 25% of trips would not need to leave the planning area or could be accommodated on transit (an assumption typically made for well-considered mixed-use projects and that can be enforced through development standards.)

Summary of Conclusions

Under the Baseline and Trend scenarios, substantial residential developments of approximately 100,000 planned additional population in the surrounding areas to the west and northwest result in Level of Service (LOS) F in the commute direction in many parts of the transportation system including river crossings. (See **Exhibit 14** ***Volcano Cliffs 2025 Trend Baseline Alternative PM Peak Hour Level of Service***). **Exhibit 15** ***Volcano Cliffs 2025 MTP PM Peak Hour Screenline Volumes*** shows regional travel demand even if no additional growth occurred in Volcano Cliffs.

When considering the amount of additional employment in the Town Center scenario (a 2200% increase over Trend), one could expect the impact of the Town Center on regional travel to be significant; however those differences are offset by the work trips captured by the Town Center. The Town Center performs somewhat better than the Trend and Village scenarios in the commute-direction where Montano crosses the Rio Grande. One exception is with arterial routes heading north of the planning area: during the afternoon commute, commuters generated by the Town Center will join commuters from existing jobs centers, who are also heading north.

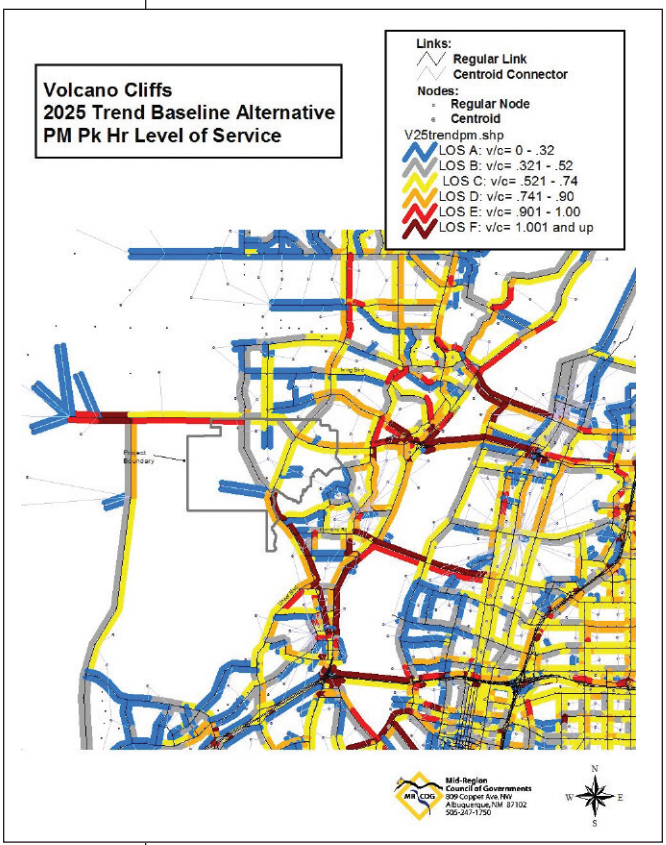


Exhibit 14

Table 3: Comparison of PM Peak Traffic Volumes

Volcano Heights Plan Area				October 5, 2005		
Route	Boundary	Direction	Baseline	Trend	Village	Town Ctr*
PdN	Eastern	Eastbound	1025	1448	1355	1778
		Westbound	1469	2099	1985	2042
	Western	Eastbound	2132	2386	2333	2210
		Westbound	1702	1641	1643	1772
Unser	Southern	Northbound	2308	3036	2855	2844
		Southbound	1663	2023	1938	2260
	Northern	Northbound	1382	1148	1194	1486
		Southbound	1003	1056	1052	1158
Universe	Northern	Northbound	1501	1257	1277	1523
		Southbound	963	1034	1011	1048
Rainbow	Northern	Northbound	1476	1341	1376	1425
		Southbound	922	954	944	923
Montano	Bridge	Eastbound	1083	1098	1094	1141
		Westbound	1574	1624	1608	1600
PdN	Bridge	Eastbound	5162	5247	5219	6243
		Westbound	6880	6988	6948	6587

Notes:
Modeling performed by MR-COG.
Yellow highlights Commute-Direction (direction with higher PM volumes)
Trip internalization expected with mixed-use, transit-supportive growth:
25% in Plan Area (enforced thru policy); 5% in surrounding areas.

Taecker Urban Design & Planning -- www.taeckerudp.com

Reverse commute

Because of an emphasis on employment, the Town Center scenario makes better use of the reverse-commute capacity on the transportation network, i.e. eastbound PdN in the afternoon instead of westbound, and southbound on Unser instead of northbound. In the reverse-commute direction, Town Center jobs generate more traffic. Yet anticipated reverse-commute traffic volumes are well below commute-direction volumes. The capacity of reverse-commute facilities is significant and would not be utilized except for the Town Center's employment.

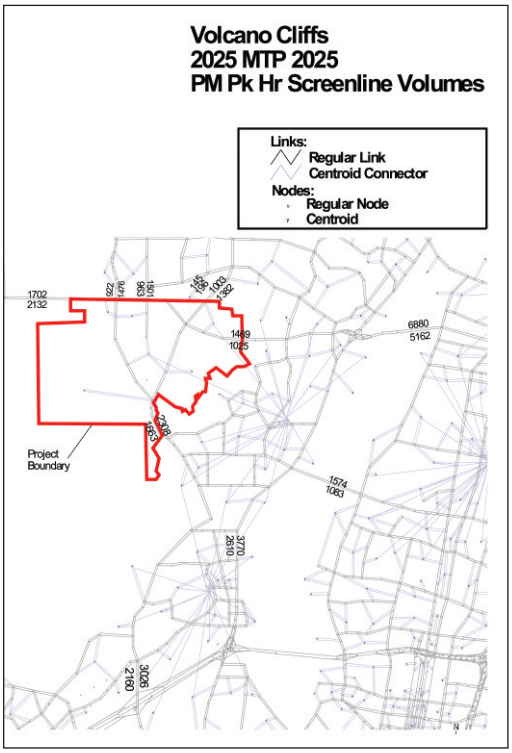


Exhibit 15
Volcano Cliffs 2025 MTP PM Peak Hour Screenline Volumes

Kimley-Horn Analysis (Volcano Heights Concept Plan–Transportation Operations Assessment and Boulevard Design Recommendations)

Urban Boulevard

The Town Center is a key feature of the Volcano Heights Plan objective of achieving jobs-housing balance on this portion of the West Side. Urban boulevards are especially well suited for town centers, where it is desirable to have building fronts and street activity facing transportation corridors while also minimizing through-traffic travel times.

The Volcano Heights Plan proposes that portions of Paseo del Norte and Unser traversing the proposed Town Center be designed as an urban boulevard that combines a high capacity throughfare with pedestrian-oriented frontages that encourage street activity. (See the Transportation Element of the Plan). This is accomplished by providing one-way frontages parallel to the street separated by a median with breaks that allow access to/from the roadway and frontage roads. This boulevard design allows a more pedestrian friendly land use plan for a higher density mixed-use Town Center while maintaining traffic capacity. The mix of uses, density, slower vehicular speeds on access roads, pedestrian friendly design features, and other architectural elements act to reduce the number of vehicular trips and their length and to encourage linked trips involving transit. The frontage roads serve fronting buildings and provide on-street parking, ample landscaping, and a pedestrian environment buffered from higher speed traffic by the frontage road itself.

Initial reviews of the boulevard proposal by local transportation planners and engineers produced concerns about the impact of its design on the flow of through traffic on Paseo del Norte and Unser Blvd. Both are planned as high volume regional Limited Access Roadways with minimum signalized intersection spacing of 1/2 mile. Concerns arose over planning proposals to reduce the spacing of signalized intersections from 1/2 mile to 1/4 mile through the Town Center and the impact of traffic turning into and out of the frontage roads interfering with the flow of traffic. The crux of the matter is the possible conflict between creating a mixed use, multi-modal transportation system appropriate to a pedestrian and transit-oriented urban center versus achieving a high volume of through traffic flow.

No local standard presently exists for urban boulevards, where arterial through-traffic is accommodated in center lanes, and local traffic and site access is accommodated on access lanes or frontage roads. The Planning Team asked that the traffic flow through the Town Center be modeled by a professional engineer to determine the impact of the proposed boulevard design on traffic movement and to provide design assistance especially for this portion of the roadway network. Kimley-Horn and Associates, a national transportation planning and engineering firm, provided the needed analysis.

The Kimley-Horn study compared the "Base Plan" intended to speed traffic through the area with the "Concept Plan" that contained several elements to address traffic flow through a balance of land use, transit, and roadway design. Transportation modeling was used to compare the traffic handling performance of the two alternative approaches. The model analyzed congestion levels at fourteen intersections in the Volcano

Heights Plan area as a whole, at Paseo del Norte and Unser travel times eastbound and westbound, distance traveled, average speed, and level of service.

Intersection Spacing

The Kimley-Horn analysis concluded that more frequent intersection spacing might be accommodated in a few limited locations with a negligible increase in travel times when moving through the planning area. Quarter-mile spacing for right-in/ right out intersections could also be accommodated with a negligible increase in travel times. Kimley-Horn reports: "The difference in total corridor travel time between the two scenarios is less than 60 seconds. This can be considered a negligible difference concluding that the Concept Plan does not significantly degrade level of service." In short, the many benefits of the Town Center can be achieved without materially reducing traffic flow.

Reviewers also raised concerns for the safety of merging traffic between the access road under the boulevard configuration and through traffic. Kimley-Horn modeled traffic flow at these access points and provided a conceptual design of the Paseo del Norte Boulevard which incorporated safety features that address the issue. The ***Conceptual Design of Paseo del Norte Blvd.*** is shown as Figure 2 in Kimley-Horn report.

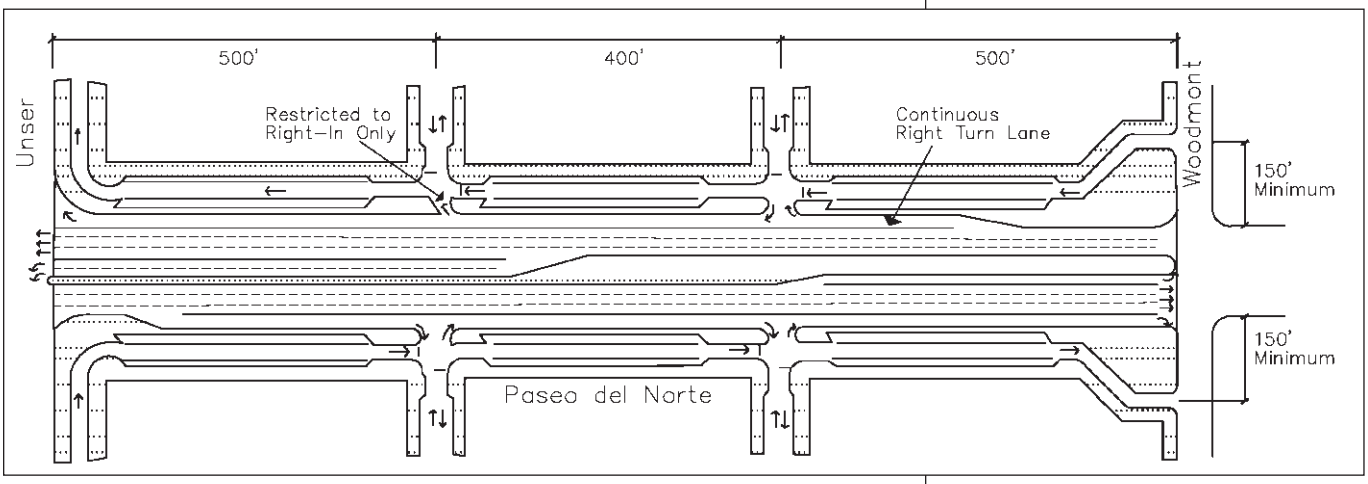


Figure 2
Conceptual Design of
Paseo del Norte Blvd.

Unser

In 1989 the Albuquerque City Council established alignment and design standards for Unser, stipulating that Unser be a parkway with not more than four travel lanes. The analysis shows that six travel lanes will be needed on Unser south of its intersection with Paseo del Norte, to reduce traffic congestion partly attributable to afternoon commuting from jobs toward the southeast to homes west and north of Volcano Heights.

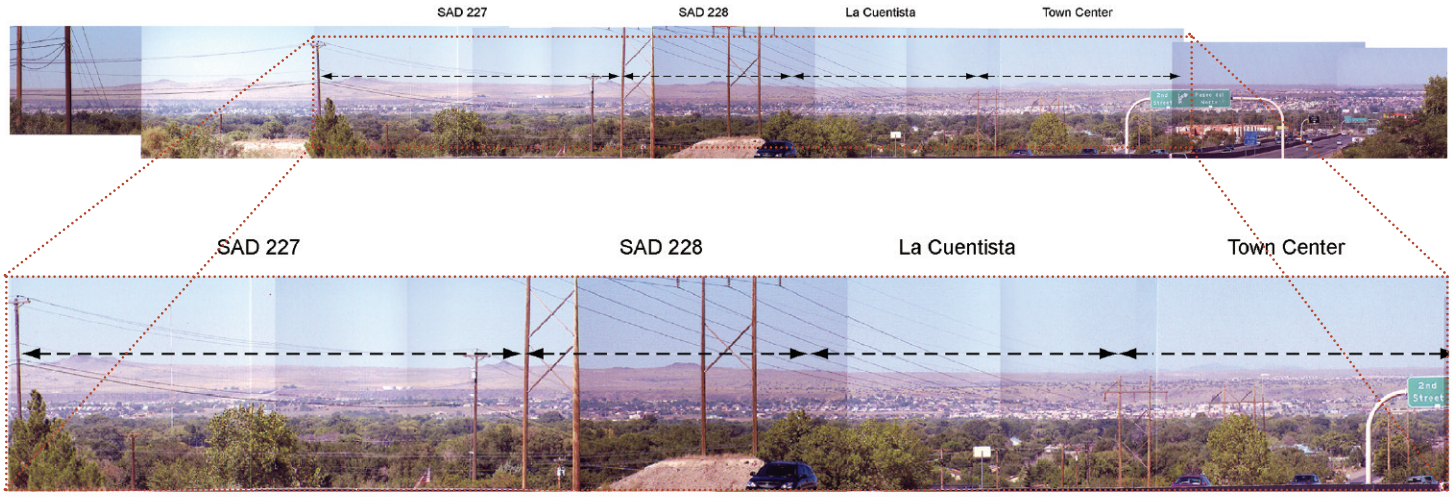
Kimley-Horn's ***Volcano Heights Concept Plan – Traffic Operations Assessment and Boulevard Design Recommendations*** report includes roadway configuration and traffic levels throughout the Volcano Heights road system, and design recommendations for key portions of Paseo del Norte and Unser. The design recommendations have been incorporated into the Volcano Heights Plan.

5. View Analysis

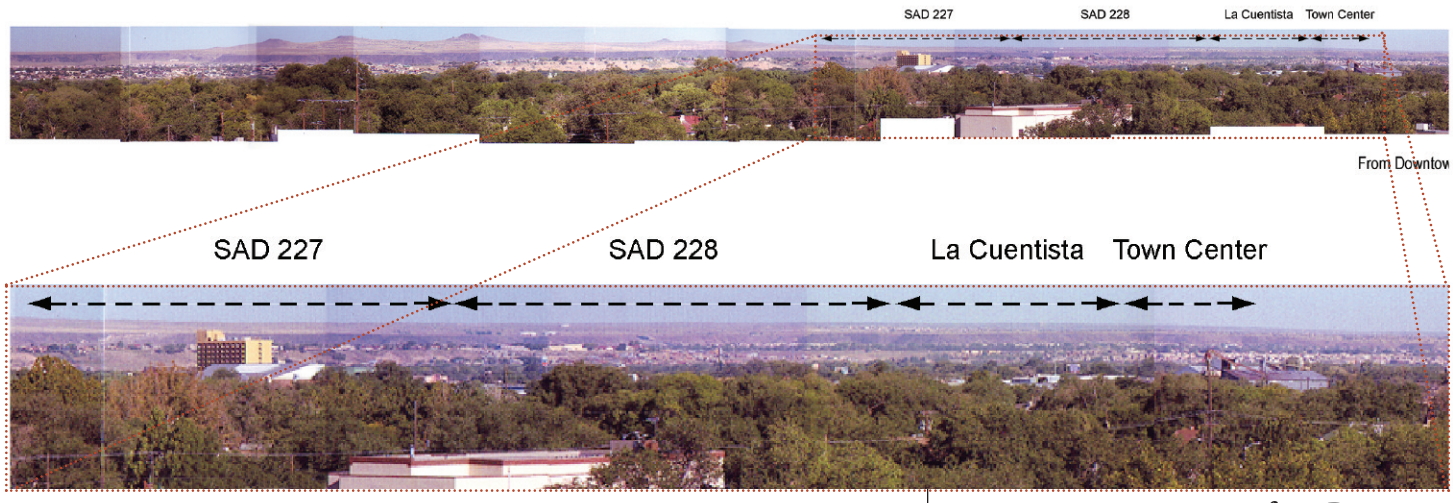
The volcanoes, rising above the volcanic escarpment on the western horizon of Albuquerque, form a dramatic backdrop to the city on the west, as the Sandia Mountains do to the east. They are an important part of Albuquerque's identity and a prominent natural feature framing the city. As described in the Meaning of Place section, for Native Americans, spiritual contemplation often embraced views to the Volcanoes, the Sandia Mountains and the Rio Grande, views that are appreciated by all cultures.

Development of the Volcano Heights Plan Area will impact views that residents see looking toward the western edge from the rest of the city. The Visual Sensitivity photo montage shows views toward the Plan Area from Downtown and from Paseo del Norte just west of I-25. It provides visual information on the extent to which different Plan Areas will be seen and where the new development will be located on the city's western horizon. From these distant locations the top of the escarpment is visible no

Exhibit 16
Visual Sensitivity photo montage shows views toward the Plan Area from Downtown and from Paseo del Norte just west of I-25.



from Paseo del Norte just west of I-25



from Downtown

matter how low the buildings are. The arrows indicate the approximate ranges of the land use districts.

Further analysis was done showing cross sections from Golf Course Road to the escarpment and from the Montano and Unser intersection northward. The additional open space setback that the Plan calls for along the Escarpment appears to be sufficient to keep development from being seen from these points. An exception is the Suburban Residential area east of the Town Center and north of Paseo del Norte. Golf Course represents a point east before descending into the alluvial basin of the Rio Grande; Volcano Heights is not visible from any point along Coors, the western edge of the basin.

Views to the volcanoes and the Geologic Windows from within the Plan Area will be protected per guidelines in the Urban Design section.

Design standards for color and reflectivity will help to mitigate the impact of development visible from distant locations.

Section Two
Plan Elements

I
Fundamental Goals

NEIGHBORHOODS

Recognize walkable neighborhoods and districts as essential building blocks of a more sustainable city and region.

Strong and healthy neighborhoods, because they operate at a scale where people walk and interact, are essential to successful and sustainable urbanization. Organizing development within walkable mixed-use districts and neighborhoods supports transit, economizes on infrastructure, and respects the environment.

Bring homes, businesses and daily destinations — like retail and community facilities— closer together within neighborhoods and districts.

Most homes should be within walking distance of a mixed-use village center containing retail, community services, and a small park or plaza. Studies have shown that this walkable pattern of development can reduce the number of vehicle-trips dramatically. Walkable districts and neighborhoods also have proven social and economic benefits resulting from better access to basic needs, amenities, safer and more active streets, improved health through physical activity, and greater cultural cohesion.

Distribute schools and parks throughout Volcano Heights, in accessible locations where children will not have to cross a busy street to get to them. Schools should not be isolated from but instead located in village centers or linked to the trail network and co-located with parks.

These locations create a rich learning environment for children to experience community life and nature. When schools and parks are closer to home, parents can spend more time with their children, older children can enjoy greater independence, and personal health and fitness improves. Co-locating schools and parks makes better use of limited public dollars and provides more developable land. Locating schools near village centers integrates schools into the neighborhood and fosters a sense of community.

Develop schools that are welcoming community facilities providing multiple uses for residents of all ages.

Schools should be integrated into the communities through their physical design and location, the programs offered, and policies concerning access. Recreational, civic, human service, and educational programs should be provided there to all members of the community at extended hours after school, on the weekends, and during the summer.

Promote diverse housing options throughout Volcano Heights.

A variety of housing types – at varying densities – allows residents, if they choose to do so, to move through all stages of life within the same neighborhood. Housing diversity will also promote business attraction and balanced development on the West Side.

Transportation

Provide a choice of viable transportation options for commuting and daily needs.

Walking is a liberating travel option, especially for children and the elderly. At greater distances, transit should offer a convenient alternative to Single Occupancy Vehicles (SOV). Reducing reliance on the automobile reduces congestion and pressures to widen roads and bridges, especially at regional "pinch points" like the Rio Grande.

Support an efficient and reliable transit system.

To support frequent service with less public subsidy, transit corridors should be lined with higher densities and major retail, commercial, and employment destinations. In suburban settings, Bus Rapid Transit (BRT) presents a cost-effective alternative with travel times that compete with door-to-door car use and paves the way for potential future light rail routes. Exclusive transit (and HOV) lanes are incorporated into Paseo del Norte and Unser in order for transit to draw closer to the performance of SOV, especially important to attract middle class commuters.

Create "Great Streets" for people as well as cars, by providing street trees, landscaping, wide sidewalks and active uses.

Paseo del Norte and Unser will adopt boulevard configurations through the Town Center to help secure these desirable activities. Streets should feel safe and comfortable for pedestrians. The design of streets and the buildings that face them influences whether someone will chose to walk. Pedestrian-friendly streets have wide sidewalks, street trees and slow moving traffic. They also have pedestrian scaled buildings with frequent entries, windows, and attractive features. Parking lots and blank walls should be minimized along pedestrian routes.

Connect different uses and areas by an efficient and convenient street network.

Streets should not create barriers that separate people and neighborhoods. Instead, streets should create safe and direct connections between common destinations. Streets should also be designed to control auto speeds and be a comfortable place for neighbors to come together. Rather than concentrate traffic, street will distribute traffic through greater connectivity of roadways.

Employment

Support the creation of a major jobs center in Volcano Heights.

Most working West Side residents commute to work east of the Rio Grande (many in downtown Albuquerque or along Interstate 25), which explains regional traffic congestion at river crossings and on the West Side. Major job growth in Volcano Heights will provide opportunities for working closer to home and will "reverse" commutes in a direction where roads have existing capacity. Frequent and reliable transit service will be provided for these new workers.

Establish a mixed-use town center as a transit-oriented development that offers a range of retail, commercial and entertainment destinations, urban housing and employment opportunities.

While neighborhood retail can meet most daily requirements, many needs must be met within larger centers that receive the patronage of greater populations. A mixed-use Town Center will bring to Volcano Heights and the West Side opportunities for comparison-shopping, entertainment, restaurants, cultural activities, and government services. Following the West Side Strategic Plan, a well-designed central plaza will serve as a focus for community life in the Town Center and create a sense of place. Many people prefer dense urban housing in mixed-use environments, which greatly increase the likelihood of walking and transit use. Transit, amenities and housing in the Town Center will help to attract employment to the West Side.

Open Space and Trails

Establish an interconnected open space network comprised of parks, arroyos, the Petroglyph National Monument, and other open spaces.

While development in Volcano Heights equals the loss of open space that many citizens have enjoyed, it is also an opportunity to purchase and conserve open space into perpetuity. An organized system of open space can help conserve the natural environment, mitigate the impacts of development, and provide exceptional recreational opportunities. Opportunities to experience nature should be plentiful, especially for children. Often, these open space features can form the boundary of neighborhoods and maintain distant views to the Volcanos and Sandia Mountains.

Drainage channels have played an important cultural role for prehistoric communities, connecting ceremonial sites on the mesa across the escarpment to Pueblo villages along the Rio Grande. They can be used today to form an interconnected east-west trail system along these original pathways.

Conserve Volcano Heights' arroyos and encourage residents' connections with nature.

The area's arroyos contain valuable habitat and scenic features that are distinctive. The arroyos contain many unique animals and plants, many used for medicinal and ceremonial purposes by Native American and Hispanic people, which could be threatened by development and a dramatic increase stormwater run-off that accompanies it. As linear open spaces, the arroyos and open space along Petroglyph National Monument also offer unique opportunities for trails.

Respect Albuquerque's patrimony of culture and history, both Hispanic and Native American, through the development of Volcano Heights.

Volcano Heights provides a unique portal to understand the rich interplay of cultures that is New Mexico. The "story" (actually stories) of the meaning of this place to Native American can be told through living and visiting in Volcano Heights, and by the way we develop this special area. As such, Volcano Heights can be another entry point for all of Albuquerque into different and important perspectives on humans' place on earth and spiritual path.

Preserve the Volcano Height natural environment through Conservation Development.

In lower density residential areas, establish a form of Albuquerque subdivision that reduces the development's impact on the natural environment and integrates resource conservation into the fabric of the community.

Views and Cultural Resources

Conserve Volcano Heights' archeological resources and protect and emphasize views and visual connections to the Volcanos, Sandia Mountains and the Rio Grande.

The Volcanoes, Petroglyph National Monument, outcrops of basalt especially containing petroglyphs, the Sandia Mountains, and other locations are sacred places for many Native Americans which still figure into their ceremonial practices. The Native Americans have left petroglyphs, evidence of prehistoric settlement, and other artifacts with still active religious and cultural value. Spiritual contemplation often embraced views to the Volcanoes, the Sandia Mountains and the Rio Grande, views that are appreciated by all cultures. Views can be protected and enhanced through considerate site planning, by creating view corridors using streets and arroyos, and by emphasizing lower scale development along the view corridors.

Maintain scenic edges for Albuquerque, protect important views, and minimize the visual impact of development on the western horizon as seen throughout the city.

The westernmost portions of the Plan area, adjacent to the rising mass of the volcanic cones, will be conserved as open space with residential homes that are clustered or maintained at rural densities. In addition, height, color and other visual qualities will be controlled along the "front edge" of Volcano Heights – just above the escarpment and throughout lower density residential areas. The built environment and landscape along the edge of Volcano Heights and the Petroglyph National Monument will form a pleasant transition from the natural area to the developed area. As seen from within Volcano Heights, open space constitutes an important resource that demands special landscape and architectural treatments.

Encourage practices that are economically, aesthetically and environmentally sound

Electrical utility distribution lines should be placed underground. Infrastructure improvements should promote and make visible an environmental ethic for the area.

Encourage architectural and landscape treatments that are consistent with the region's traditions and climate, and help to establish a unique sense of place.

Albuquerque's design traditions spring from its arid climate, intense sun, local materials and the cultural background of its inhabitants. These considerations deserve continued attention, out of respect for the past and also out of concern for an energy- and water-efficient future.

Development Phasing

Provide for the orderly expansion of infrastructure and public facilities in the area

Volcano Heights' infrastructure improvements will need to be phased in a way that recognizes technical limitations and available funding and that provide infrastructure and facilities in a timely way to meet the needs of residents and local employees. Elementary school boundary areas are used as the organizing principle for the timing and phasing of growth.

II
Transportation

1. Intent

Transportation facilities have an enormous influence on the character of future development and on lifestyle choices. They influence whether we can walk or have to drive, whether bicycling and hiking are easy options for recreation, and whether transit can get us to jobs or cultural events quickly. Street design makes it possible for homes to face the street creating an outdoor "living room" for the neighborhood rather than a wall of garages. It is even been shown that street design influences how well we know our neighbors.

Streets and Walking. The standards of this plan are intended to create streets that are more pedestrian-friendly, while also meeting the demands of motorists and emergency vehicles. Walkable neighborhoods are the basic building block for more livable—and environmentally sustainable—cities. Design plays a vital role in their creation. An arrangement of complementary land uses with pedestrian compatible design paired with inviting streets influence the extent to which workers and residents walk to local destinations and use transit. Pedestrian-friendly streets are a foundation to transit-oriented development and create an alternative to driving for many daily needs.

In deciding to walk or bike instead of drive, pedestrian and biking environments must feel safe and comfortable. Fast, unmitigated traffic presents a major deterrent. The incidence of major pedestrian and bicycle injuries is significantly reduced when vehicle speeds approach 25 miles per hour. The use of modest travel lane widths and traffic calming devices slows traffic, while adding little to motorists' real travel times.

Pedestrians feel more comfortable when on-street parking and street trees are placed between sidewalks, and when street crossing distances are reduced. Street trees reduce temperatures by as much as ten degrees—an important advantage on hot days—and on-street parking is critical to attracting street-facing shops.

Pedestrian comfort and safety are influenced by the relationship between abutting uses and streets. Streets lined by rear yard fences, garage doors or parking lots are unwelcoming, and have been shown to attract more crime than streets lined by building entries, creating semi-private space through porches and stoops, and windows. Traffic must be kept to modest volumes, however, to encourage street-facing buildings in most settings. A highly interconnected street network plays a critical role in keeping traffic volumes to appropriate levels. Street connectivity also reduces pedestrian travel distances to local destinations, and integrates the many functions and activities of a city center.

Great Streets and Boulevards. The roadways through Volcano Heights should be pleasant and memorable places, whether experienced by car or on foot. The basic recipe

for great streets is simple: provide sidewalks sized to anticipated activity; plant closely-spaced street trees; and keep cartways to minimum dimensions. In urban areas, frame streets with handsome building fronts placed close to the street, and where a rural setting is desired, avoid curbs and group buildings together to retain "long views" across open space.

Transit. Transit plays a vital role in reducing regional traffic congestion, but to be widely used it must be fast, frequent, and reliable. Volcano Heights' emphasis on walkability and urban development will make more frequent transit service viable. The Bus Rapid Transit (BRT) system proposed for the area uses dedicated bus lanes and emerging technologies to make travel times competitive with the car. As proposed, BRT would efficiently move area residents and workers to and from jobs and activities in central Albuquerque and in the I-25 corridor.

Trails. Bicycling and hiking will be encouraged through a network of open space trails and supportive street features, like bike lanes and landscaping. These facilities will make biking and hiking safer and more enjoyable, whether it is for commuting, errands, or leisure. Trail locations and design will help avoid human activity on ecologically- and archeologically-sensitive lands.

2. Street Network

Major Street Network. The alignment of major streets within the Volcano Heights Area Plan is described on the ***Road Network*** map (Exhibit 17) This map shows street types forming an interconnected network that can distribute traffic among multiple routes, and thereby reduce reliance (and excessive volumes) on fewer routes. The network will enhance access in the Plan Area by providing routes that are more direct, and by reducing traffic volumes on collector streets and arterials, so that fewer travel lanes and a more intimate, pedestrian-supportive environment can be created. (Refer to Kimley-Horn's ***Volcano Heights Concept Plan – Traffic Operations Assessment and Boulevard Design Recommendations*** report). Amendments are needed to the Middle Rio Grande Council of Governments *Long Range Major Street Plan* and to the design standards for Unser Boulevard contained in Bill No. F/S R-455 (Enactment 169-1989).

While the integrity of the street network should be maintained, minor adjustments to the street alignments depicted may be made to avoid significant rock outcroppings, or archeological or biotic resources, or to respond to unanticipated engineering factors.

Street Connectivity. The Road Network map shows the recommended alignment of limited access roadways, arterial and collector streets. The alignment of local streets has not been determined, as they depend on the requirements of future, still-to-be defined projects.

Diagram 1 ***Street Network*** contrasts an interconnected network of streets using one-quarter mile intersections, with a conventional pattern of street design in which there are fewer entrances from local to major streets. In the Town Center, Village Center, Neighborhood Mixed Use and Residential zones, adequate connectivity

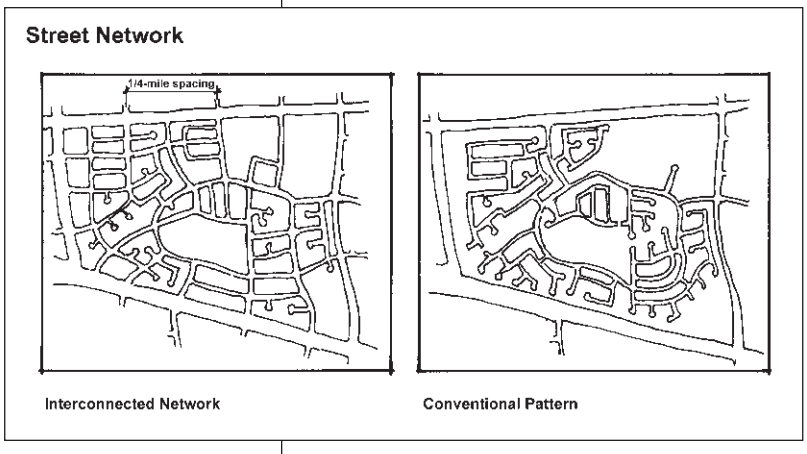


Diagram 1

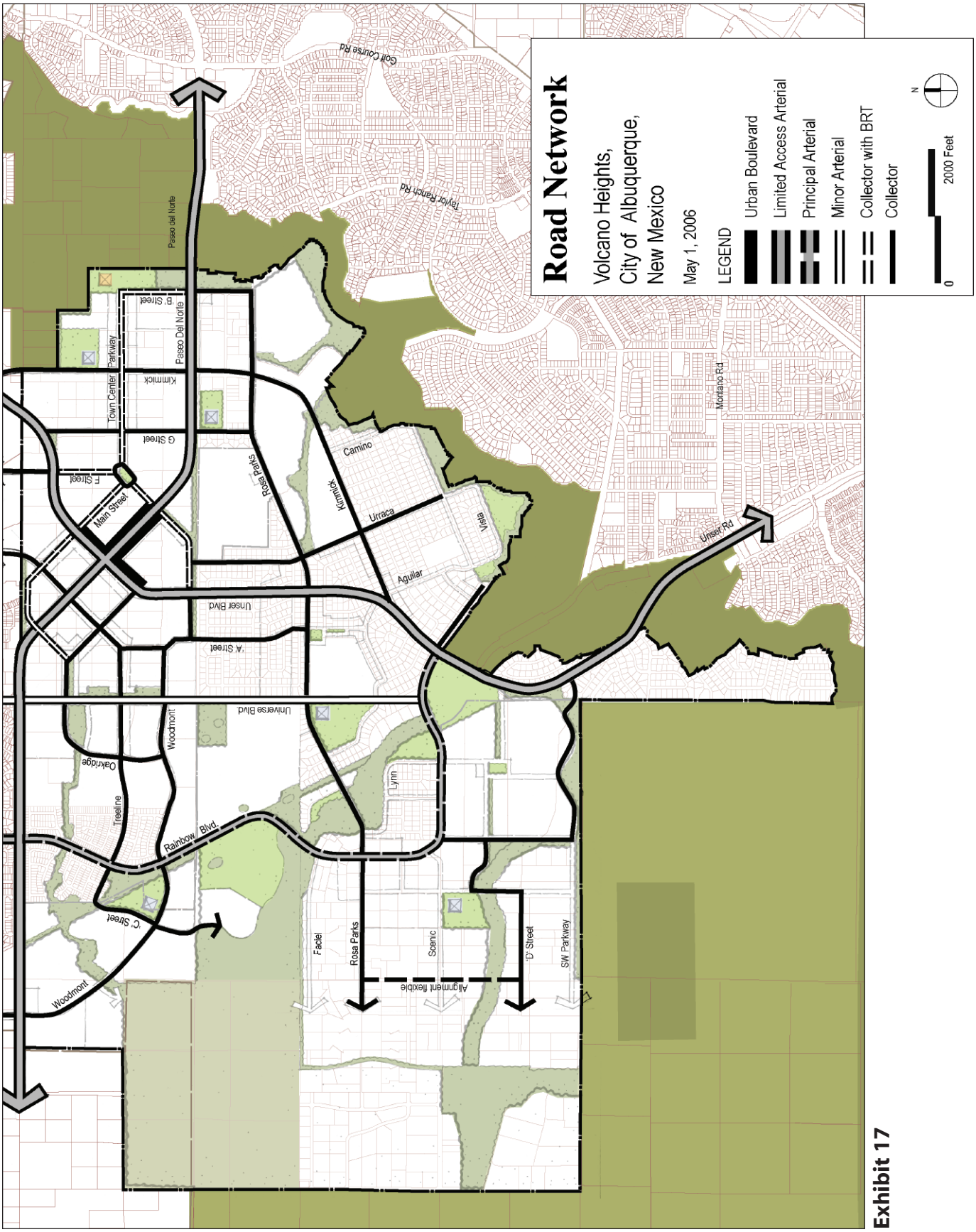

Road Network
Volcano Heights,
City of Albuquerque,
New Mexico
May 1, 2006
LEGEND
Urban Boulevard
Limited Access Arterial
Principal Arterial
Minor Arterial
Collector with BRT
Collector
0
2000 Feet
N
Golf Course Rd
Taylor Ranch Rd
Paseo del Norte
B Street
Paseo Del Norte
Town Center
Parkway
Kimmick
G Street
F Street
Main Street
Rosa Parks
Kimmick
Camino
Urraca
Vista
Aguilar
Unser Blvd
A Street
Universe Blvd
Woodmont
Oakridge
Treeline
Rainbow Blvd.
C Street
Woodmont
Lynn
Facel
Rosa Parks
Scenic
Alignment flexible
'D' Street
SW Parkway
Montano Rd
Unser Rd

Exhibit 17

among streets must be assured. Adequate connectivity is critical for providing direct routes to local destinations, and for disbursing traffic such that all streets can be pedestrian-friendly. To ensure adequate connectivity, continuous street connections shall be provided at least every 800 feet, except near Open Space, Executive Residential and Rural Estate areas. Continuous street connections may be accompanied by offset intersections at special locations and by traffic calming features to discourage cut-through traffic.

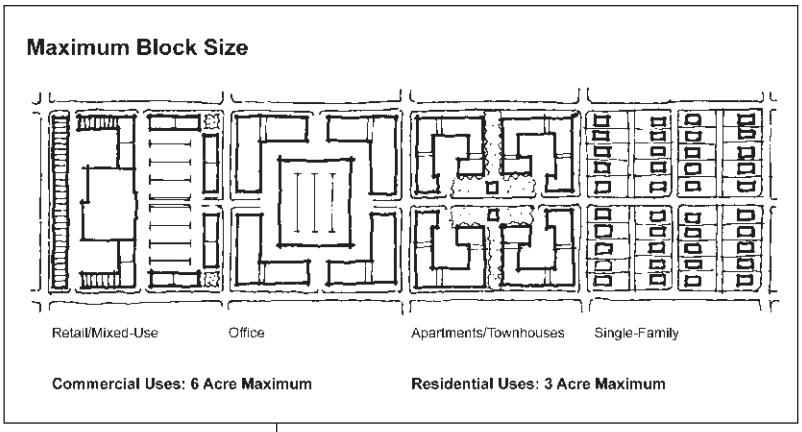


Diagram 2

Block Size. Smaller city "blocks" (bound by streets or publicly-accessible open space) ensure that streets and pedestrian routes are more direct and intimate in scale. Blocks shall be fully bound by streets, or bound on one side by a publicly accessible path or open space. In Village Center, Town Center, Main Street, Urban Residential and Suburban Residential zones, blocks shall not exceed: 3 acres for residential uses (including residential over storefronts), and 6 acres for retail and office uses. Maximum block sizes are shown in Diagram 2. Block size requirements do not apply to Rural Residential, Executive Residential, or public uses.

3. Street Design

Contextual Street Types. Street design shall correspond with each street's unique function and context. This *contextual* approach puts in place conditions that support abutting land uses and walking for many trips by: protecting pedestrians, minimizing pedestrian crossing distances, and reducing vehicular speeds, and protecting ecologically- and archeologically-sensitive features—while also accommodating reasonable vehicular travel times. The Area Plan depicts the alignment of arterial streets and most collector streets, as described on the Road Network. Local street alignments are not the subject of the Area Plan. Where emergency access is required, the clear uninterrupted dimension of any cartway shall not be less than 14'.

Sidewalks and Street Trees. Where average densities exceed 2 units per gross acre, sidewalks should accompany all streets. Street trees should be placed between the curb and where most pedestrians walk: within grated tree-wells along shopping streets and where drop-offs occur frequently; and within landscaped strips in other areas. Where average densities are less than 2 units per acre, trails and gravel shoulders may be used in lieu of streetside sidewalks. (See Diagram 3).

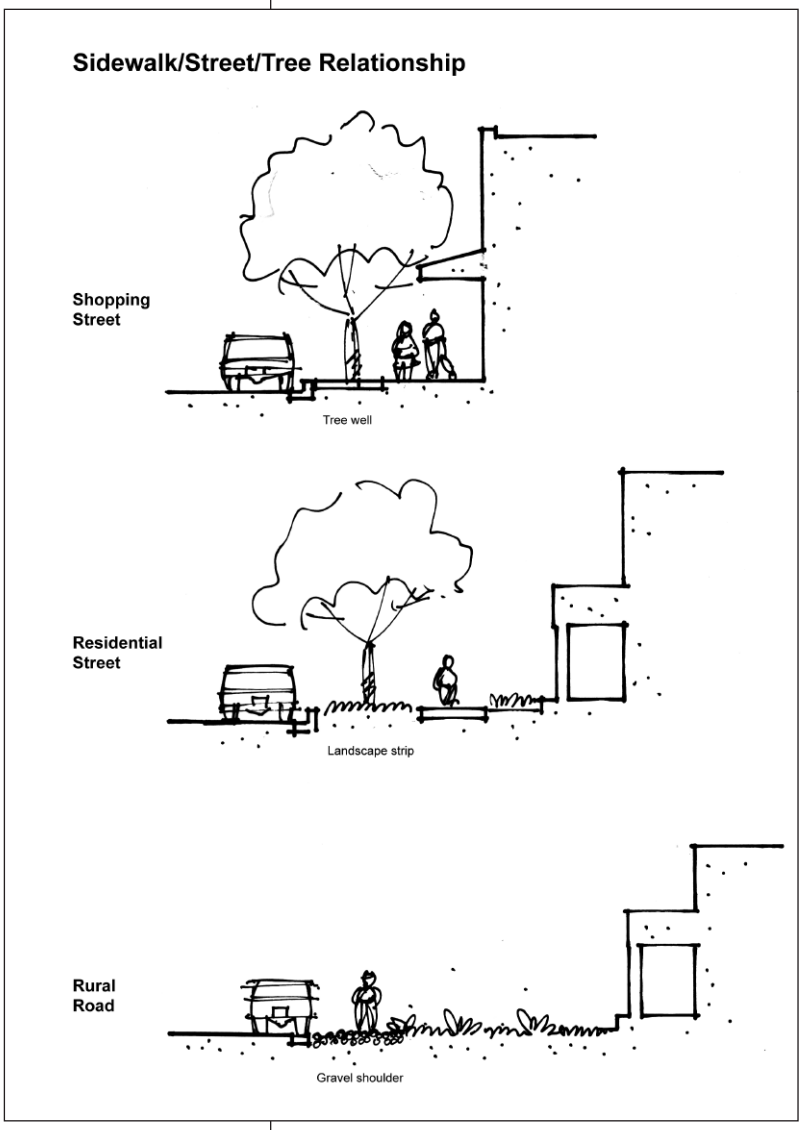
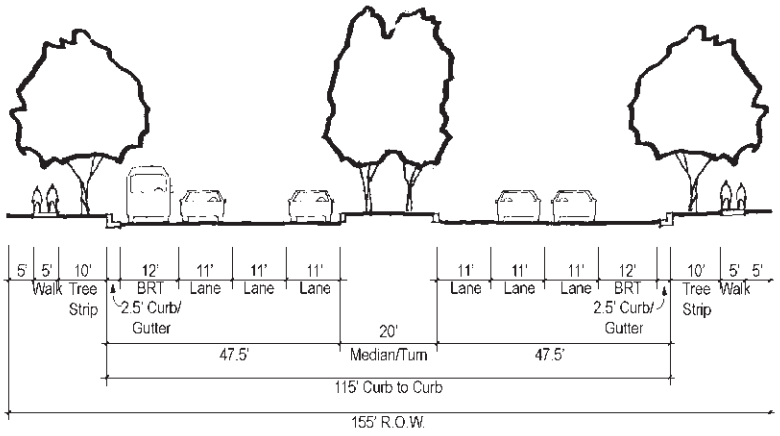


Diagram 3

Arterials. Arterials accommodate the highest traffic volumes in the Area with significant volumes of through traffic. Arterials have 11-foot travel lanes, and include: Paseo del Norte (PdN), Unser, Rainbow, and Universe. PdN and Unser are designated Limited Access Roadways on the regional Long Range Roadway System Plan. For each arterial, the number of travel lanes (non-BRT) remains constant, except for a short segment of Unser just south of PdN to improve the performance of the Unser/PdN intersection. BRT lanes are also designated for PdN and Unser in places where the BRT is not serving the center of the Town Center and Universe Village. In addition to these variables, some arterial cross-sections are designed expressly to provide pedestrian activity and parking where street-facing storefronts are desired. Bicycle lanes accompany some Arterials.

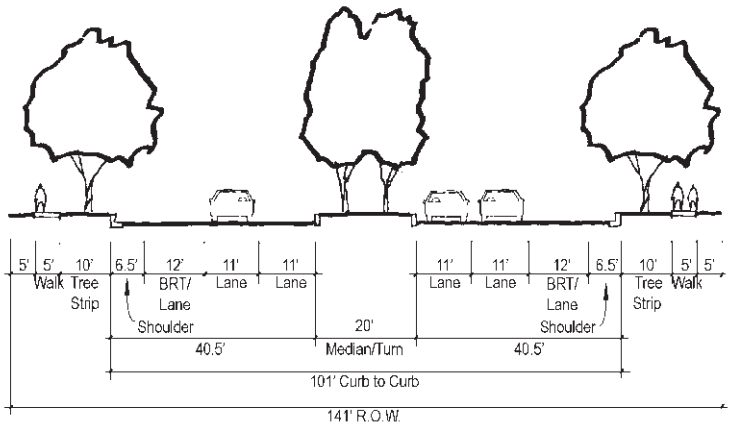
Limited Access Roadways - Paseo del Norte and Unser (**Exhibit 18** ***The Limited Access Arterials Key Map)*** shows where the various cross-sections apply to the road system. Three segments for Unser are shown: the portion through the escarpment, through the Town Center, and elsewhere. Some elements of Unser are uniform throughout.

Cross Sections for Limited Access Roadways



Paseo del Norte
6 Lane plus BRT

Cross Section 1



Paseo del Norte 6 Lane without BRT
Unser 6 Lane without BRT
Unser 4 Lane plus BRT

Cross Section 2

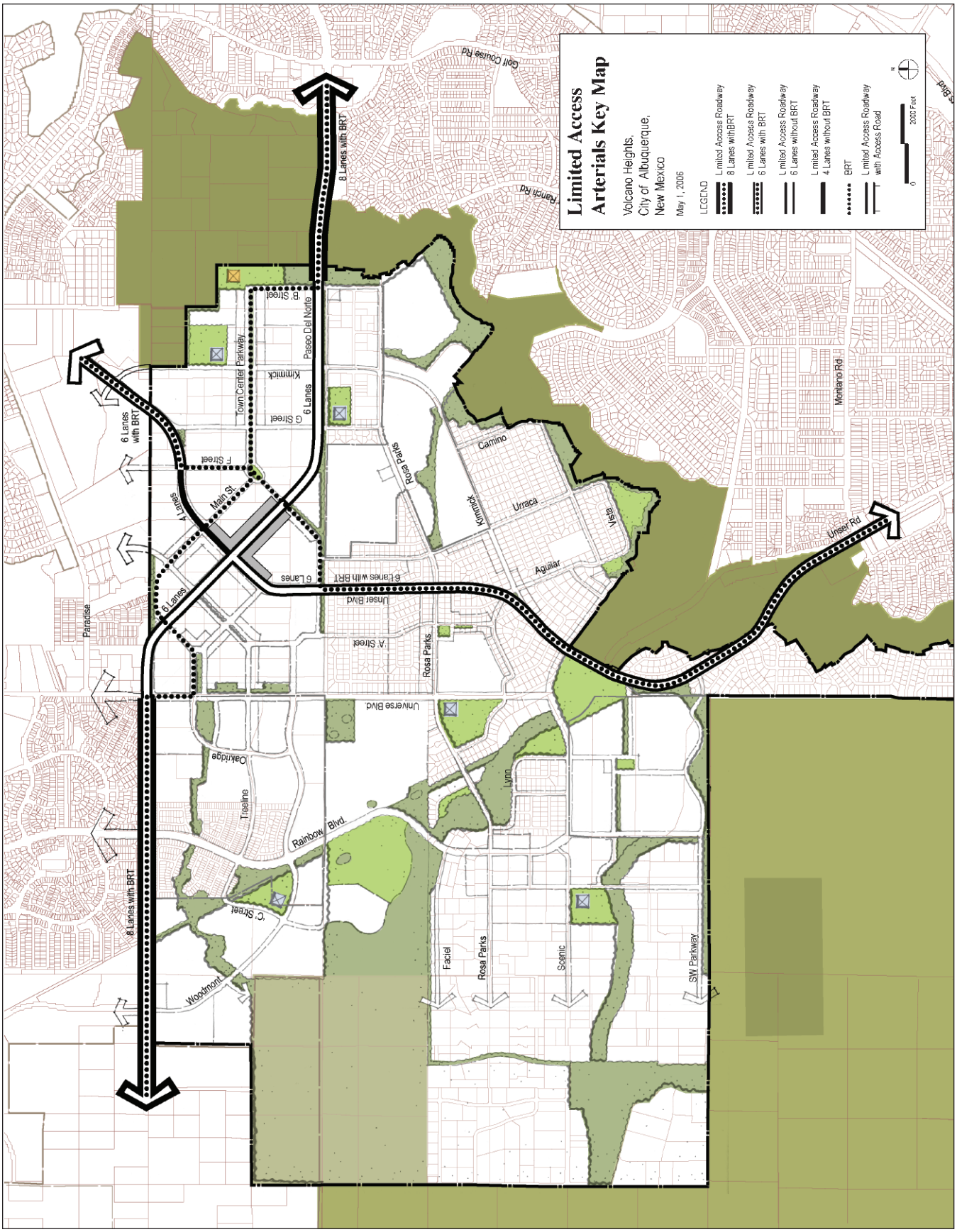
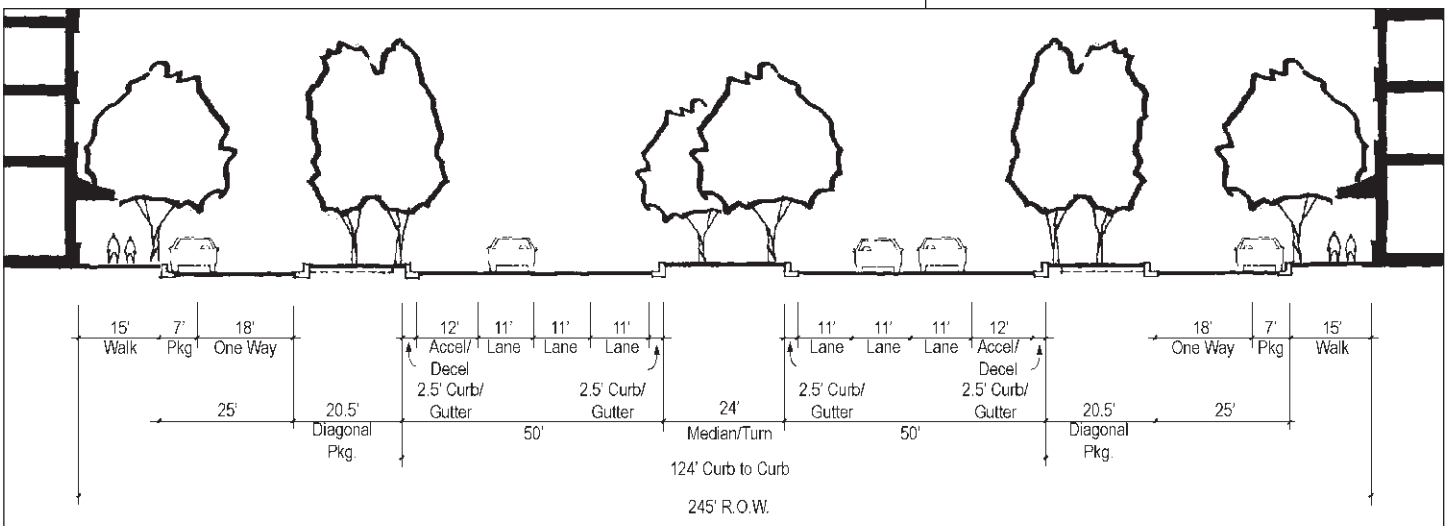


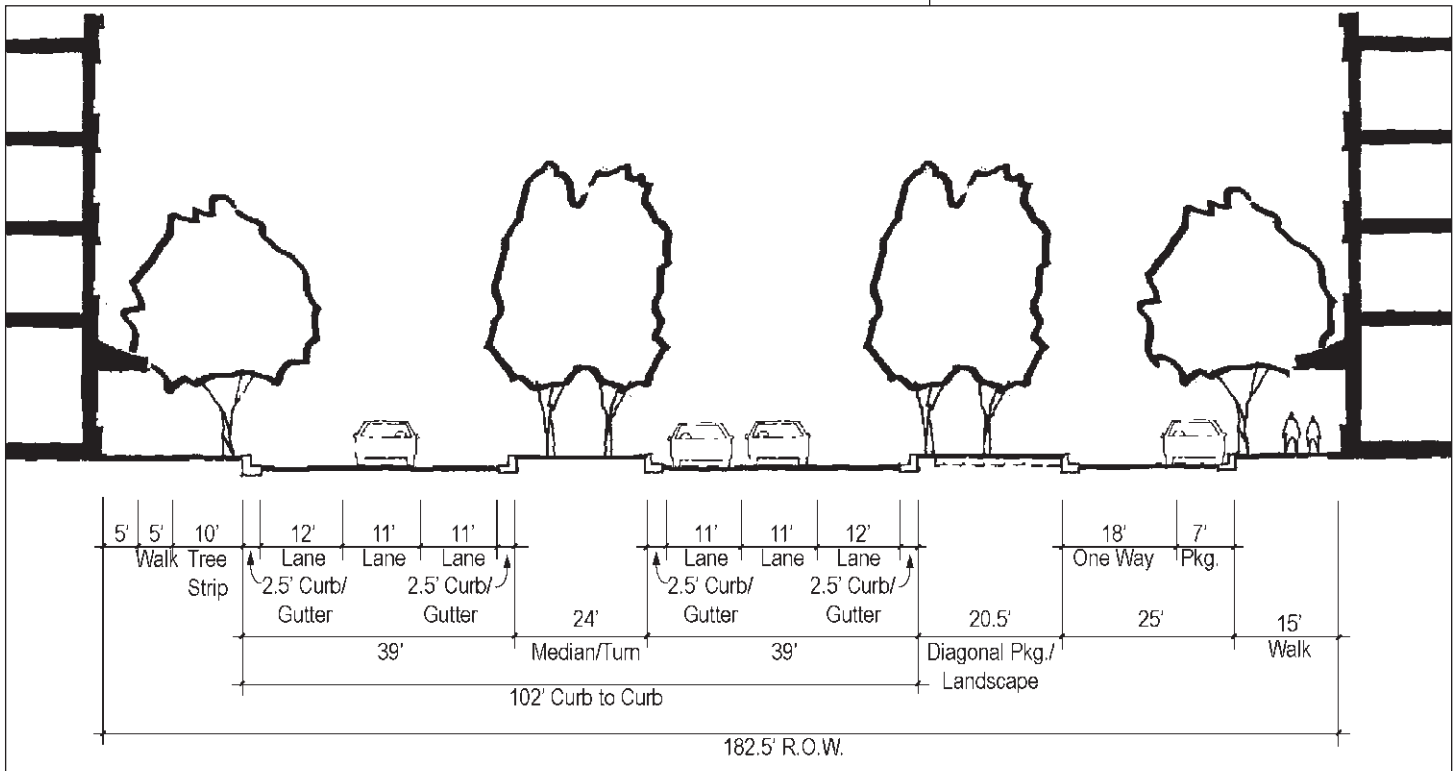
Exhibit 18
Limited Access Aterials Key Map

Cross Sections for Limited Access Roadways



Paseo del Norte (Access Lane Both Sides) – Urban Boulevard

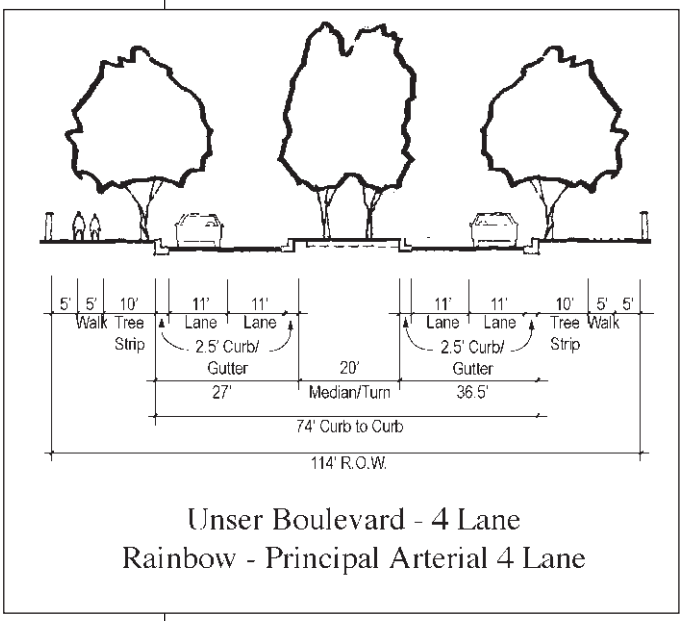
Cross Section 3



Unser Boulevard Access Lane One Side – Urban Boulevard

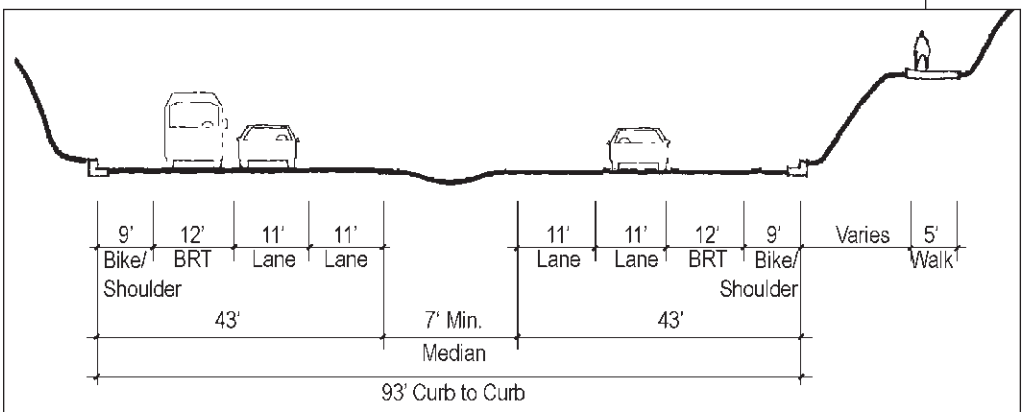
Cross Section 4

Cross Sections for Arterials



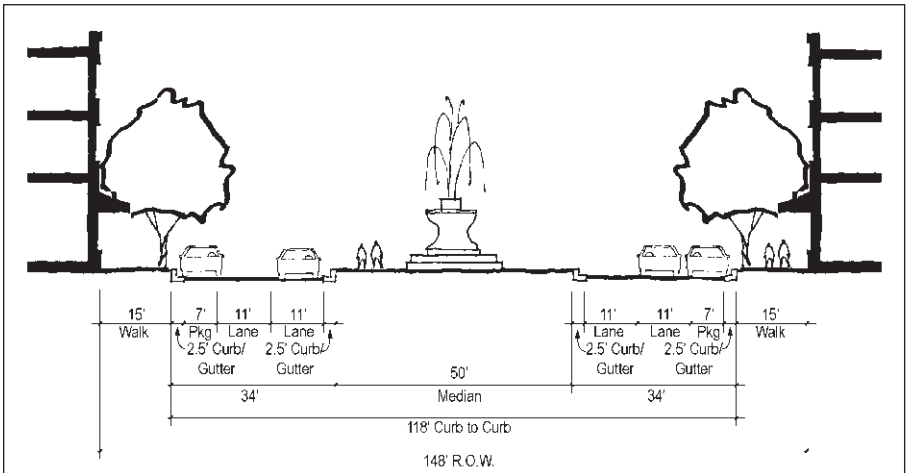
Unser Boulevard - 4 Lane
Rainbow - Principal Arterial 4 Lane

Cross Section 5
Rainbow has four drive lanes (two each direction) and one median/ turn lane.



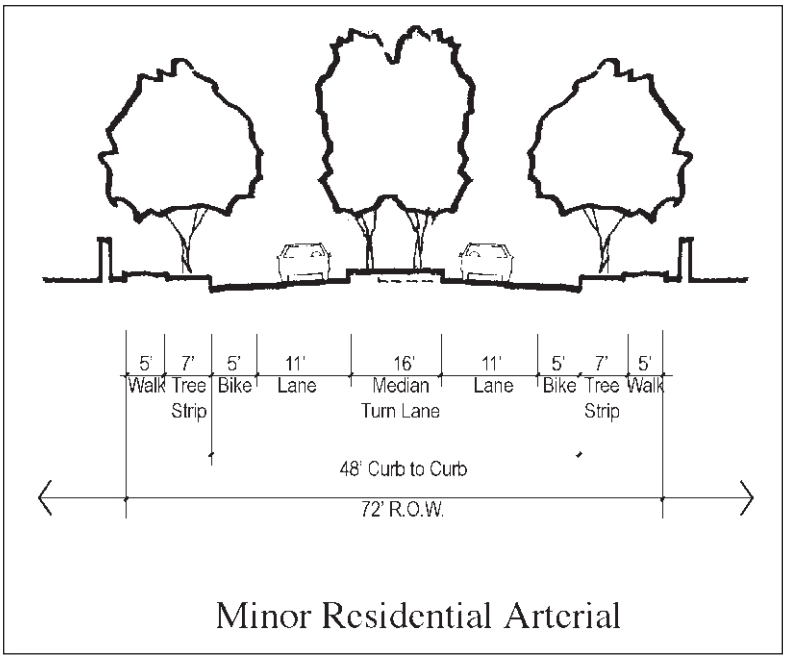
Unser Boulevard through the Escarpment

Cross Section 6

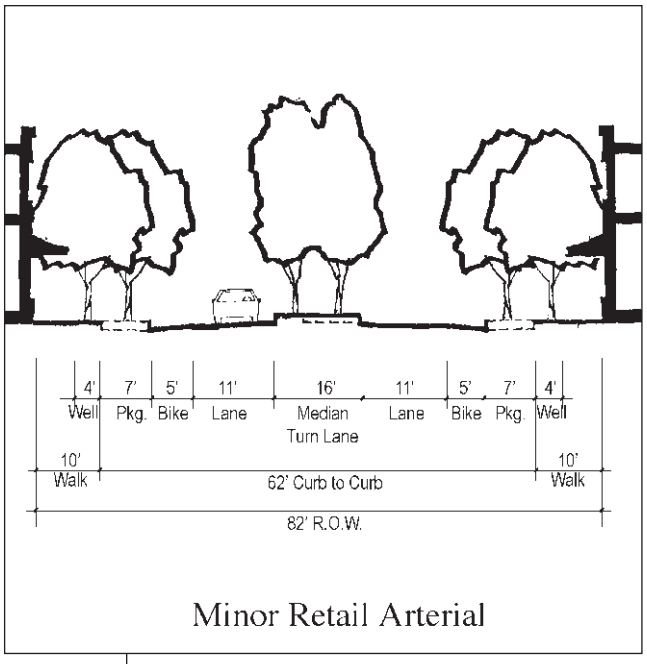


Principal Arterial 4 Lane
with Parkway

Cross Section 7
This section is appropriate for Rainbow Blvd. through the Rainbow Village Center.



Cross Section 8
Universe has two drive lanes (one each direction) and one median/ turn lane. Bike lanes are also incorporated.

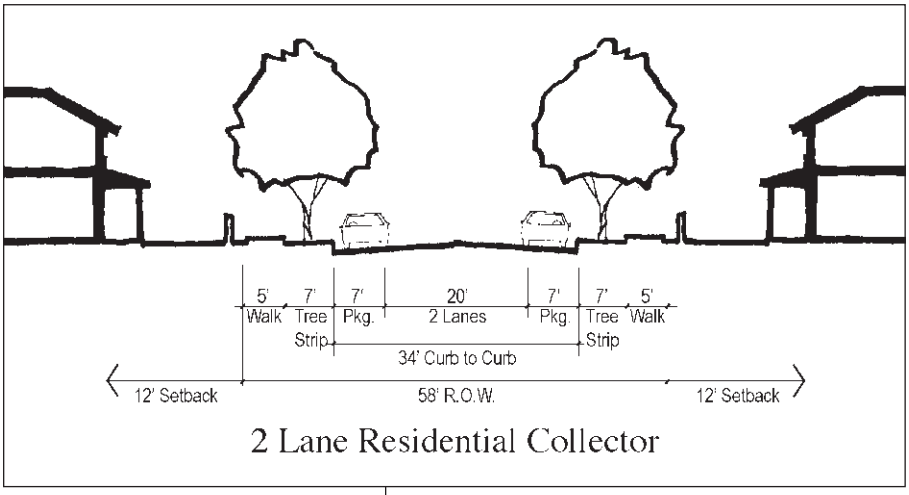


Cross Section 9
Where urban uses like retail uses, apartments or townhouses are anticipated, parking lanes should also be provided.

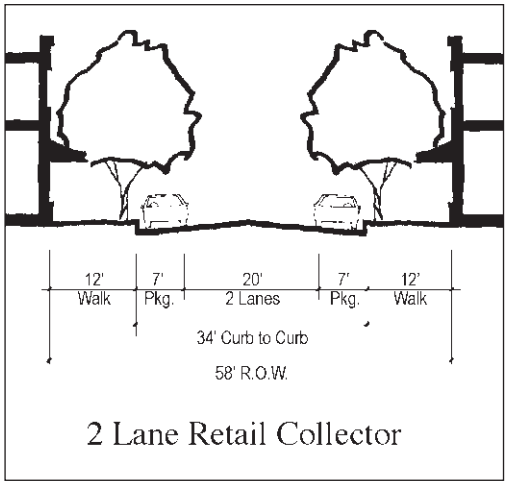
Cross Sections for Collectors

Collectors. Collectors have two 10-foot travel lanes and parking lanes. Collectors are key to creating an outdoor room effect in the interior of pedestrian-oriented centers.

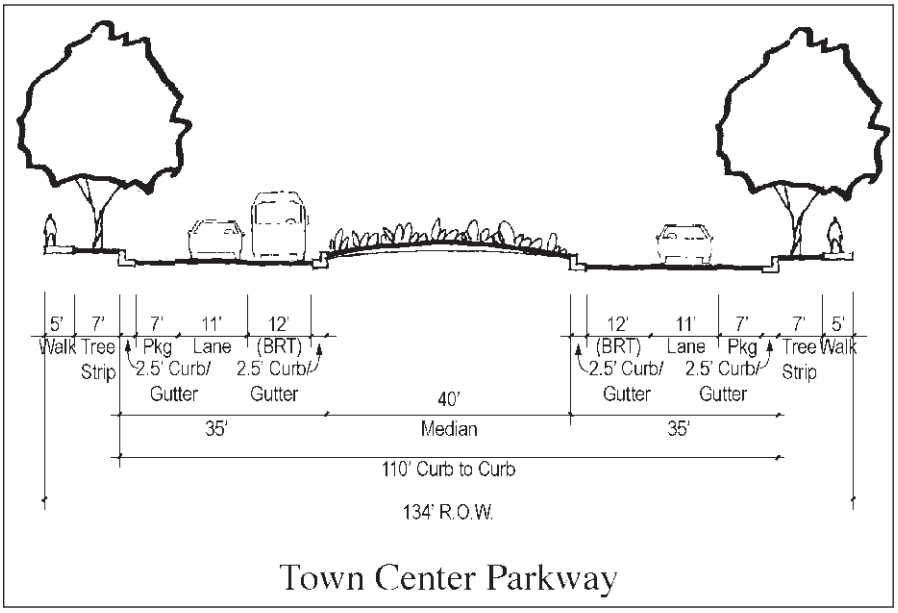
- **Retail Collector** "Main streets" establish conditions favorable for creating shopping streets with abutting retail or other commercial uses. On-street parking is provided to support street-facing commercial uses. With higher levels of pedestrian activity, sidewalks with tree grates extend to the curb.
- **Collectors — Typical** Collectors have on-street parking and sidewalks to support street-facing entrances and uses on abutting parcels (except near major intersections whereon-street parking may be eliminated and a turn-lane may be introduced).
- **Collector Parkway —** The Plan recommends the creation of a linear parkway (shown as Town Center Parkway on the Road Network) consisting of a 40 ft landscaped median that extends between the heart of the Town Center to a park just above the Monument escarpment. Collector-level traffic and BRT will be accommodated and will be one-way along each edge of the parkway to maintain a strong connection between the parkway and abutting uses and minimize pedestrian crossing distances. When framed by urban buildings, linear parkways create a strong sense of place. This parkway will also provide a dramatic view of the Town Center to the Sandia Mountains to the east. When on the east side of the park, motorists and pedestrians will also have views of the volcanoes to the southwest.



Cross Section 10
Collectors have two 10-foot travel lanes and parking lanes as shown in Cross Section 10 and 11.
Collectors are key to creating an outdoor room effect in the interior of pedestrian-oriented centers.

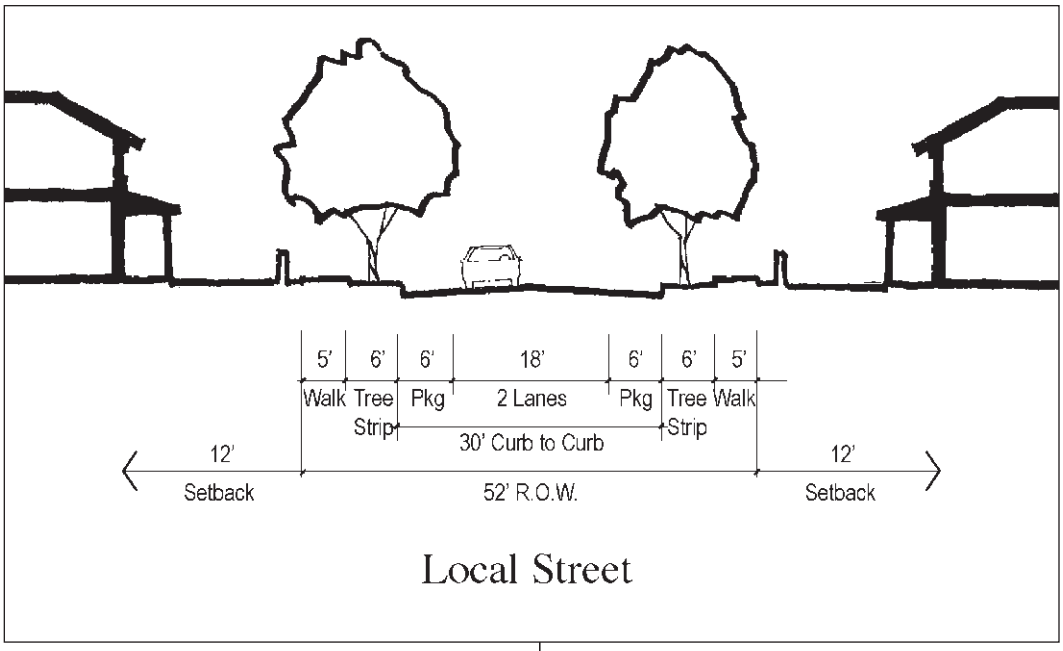


Cross Section 11



Cross Section 12

Local Streets. Generally, local streets are not shown on the Road Network map. Local streets have two (2) 9-foot travel lanes, which emphasize pedestrian safety over vehicular speed. With low traffic volumes, conflicts between traffic and parked-car doors are rare, and 6' parking lanes are appropriate. When engineering curves, a maximum design speed of 25 miles per hour should be assumed. If interconnected and frequently spaced, a network of local streets will avoid concentrations of traffic that require wider travel lanes elsewhere.



Cross Section 13

Parking — Typical Where abutting uses have a commercial, industrial, cultural or educational component, and where residential uses exceed a density of 5 dwellings per net acre, parking shall be provided on both sides of the Local Street (except where elimination of a parking lane can help avoid significant natural or archeological resources).

Parking — 1-Side. Where abutting uses are residential with density less than 5 dwellings per net acre, parking shall be provided on only one side of the Local Street.

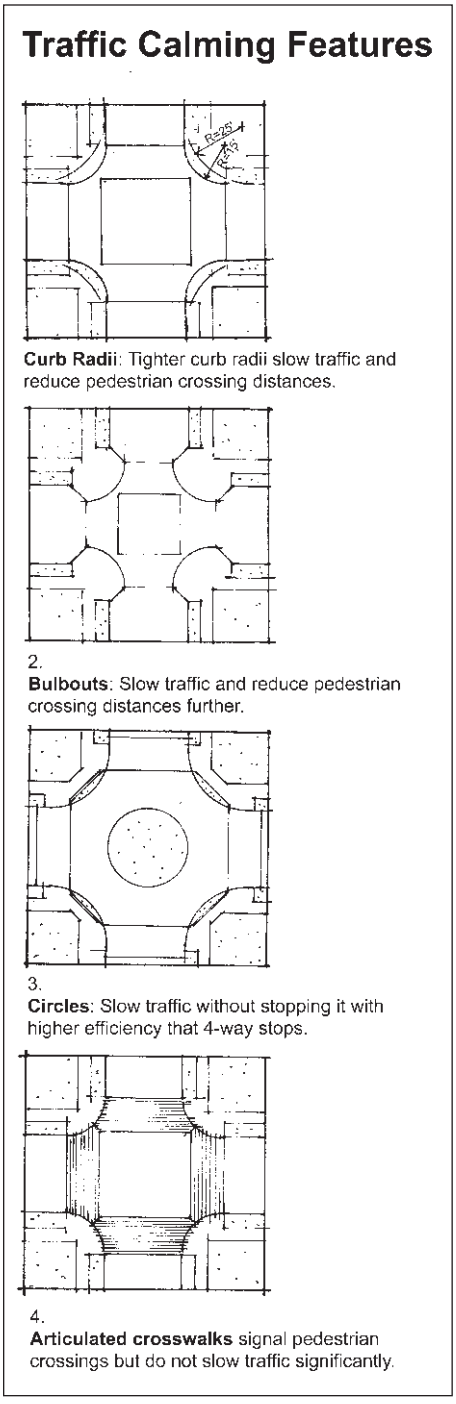


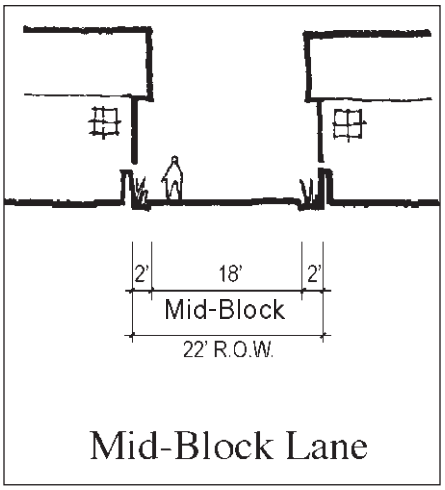
Diagram 4

Mid-Block Lanes Mid-block lanes provide access to garages and service areas placed behind buildings, thereby avoiding negative visual and transportation impacts of garages doors, parking structures and service areas that face streets. Mid-block Lanes are encouraged in Town Center, Village Center, Main Street, Office and Urban Residential areas. Mid-block lanes should also be used wherever street-facing buildings are desired but curbcuts are problematic, and where buildings front onto open space with no intervening street.

Traffic Calming Features

To discourage fast and cut-through traffic, traffic calming should accompany the interconnected street network called for in these standards. A measure of traffic calming will be provided through the use of appropriately dimensioned travel and parking lanes. (Excessive street width has been identified as a major contributor to higher vehicle speeds and a higher incidence of severe injuries.) Additional techniques may be employed to calm traffic, in support of pedestrian safety and convenience.

Curb Radii. To reduce pedestrian crossing distances and slow traffic curb radii shall not be more than 15', except where no pedestrian crossing is expected, significant truck or bus traffic is expected; or where there are special demands for acceleration or deceleration. Where curb radii exceed 15', other measures should be considered to support pedestrian safety.



Cross Section 14

Bulbouts. Bulbouts extend curbs and replace parking lanes. They are especially warranted at intersections and other pedestrian crossings in areas with: high pedestrian activity; where motorists need to be alerted that they are entering a pedestrian-oriented area (e.g. "gateway" locations), and where pedestrian refuge and short crossing distances are critical (e.g. near facilities for children or senior citizens).

Offset Intersections. Travel routes that force turns because of offset intersections, slow traffic and discourage cut-through traffic. For special places such as locations of civic buildings, intersections should be offset by at least 100 feet, unless the road geometry provides adequate sight lines. Offset intersections also provide special vista opportunities for parks, civic buildings, building entries, monuments, or exceptional architecture.

Circles. Traffic circles slow traffic while offering capacities for turning movements that usually exceed conventional 4-way intersections. Circles can be small enough to be placed in the middle of typical intersections, or large enough to accommodate parking and handle complex intersection geometries. Intersections recommended for traffic circles are shown on the road network.

Articulated Crosswalks. At crosswalks, special visual and physical features can signal the needs of pedestrians to motorists. Articulation can be created through the use of signage, lighting, special pavers, textured concrete, and highly reflective paint. Where traffic volumes are low and pedestrian volumes are high, crosswalks are to be placed at the same level as abutting sidewalks to make vehicles ramp up to that level and signaling that pedestrians take precedence.

Arroyo Crossings . At arroyos, the length of culverts (i.e. the width of bridges) should be minimized by eliminating both the median and landscape strips. Bridge concrete, railings and barriers should be brown.

Landscaping. Street trees and landscaping improve pedestrian comfort and contribute to the image and identify of Volcano Heights and its districts. Street trees should be spaced not less than 40 feet on center.

IV. **Open Space** for a more detailed description of landscaping appropriate for streets. For each type of street in Volcano Heights, there should be a preferred palette of trees, shrubs, groundcover, light poles and light fixtures. (Street types are noted at the beginning of Transportation). The City of Albuquerque should undertake the creation of this palette. Masterplanned projects shall submit a proposed palette for consideration by City staff.

Street Lighting Light standards shall not exceed a height of 20' on Arterials and Collector Streets, and 16' on Local Streets and alleys. Cobrahead light standards should not be used, except at the largest intersections. On Scenic Routes — and in other locations adjacent to arroyos or the open space buffer adjacent to Petrography National Monument — only light bollards should be used, except where a light pole is critical for safety. Light standards should utilize metal standards with a durable, low-luster finish. Fixtures should provide "cut-off" angles and light standards should be positioned to avoid glare into residential units. Specific light standards and fixtures should be identified and approved as part of more detailed Plans.

Above-Grade Obstructions. Utility boxes, light standards, newsracks, postal boxes, street furniture, and other potential impediments to pedestrian movement should be positioned to maintain continuous and uninterrupted pedestrian routes.

Signage. A signage program should be identified and approved as part of more detailed master plans, and should include monument signage at major gateways (street entries) to Village Centers and the Town Center.

Sustainable Design

Diagram 6 shows how street features can improve stormwater quality and permit stormwater infiltration. Typically, curbs and gutters collect and concentrate pollutants, and direct them into pipes that carry pollutants to arroyos, rivers and other waterways. Sustainable design features allow stormwater to be filtered or percolate into the ground, and can reduce the demand for and cost of conventional pipes.

Swales With Curbs. Where streets are abutted by commercial or residential uses in excess of 2 dwellings per net acre, curbs shall accompany swales. Regularly spaced curb inlets or drains shall be used to direct stormwater from gutter to swale.

Swales Without Curbs. Curbless streets allow rain to sheet into streetside swales without interruption. Curbs need not be used where residential densities are less than 2 dwellings per net acre and swales are provided, and where streets abut arroyos. Where streets abut arroyos, gravel shoulders may be substituted for parking lanes. For maintenance, a concrete band shall be poured at the edge of the street to accommodates uninterrupted drainage.

Permeable Paving. Permeable concrete or unit pavers may be used for driveways and parking areas. Permeable pavers should not be used in locations of high use. Porous concrete can be laid above subsurface stormwater storage and infiltration areas to meet discharge needs, and becomes cost-effective in dense urban settings.

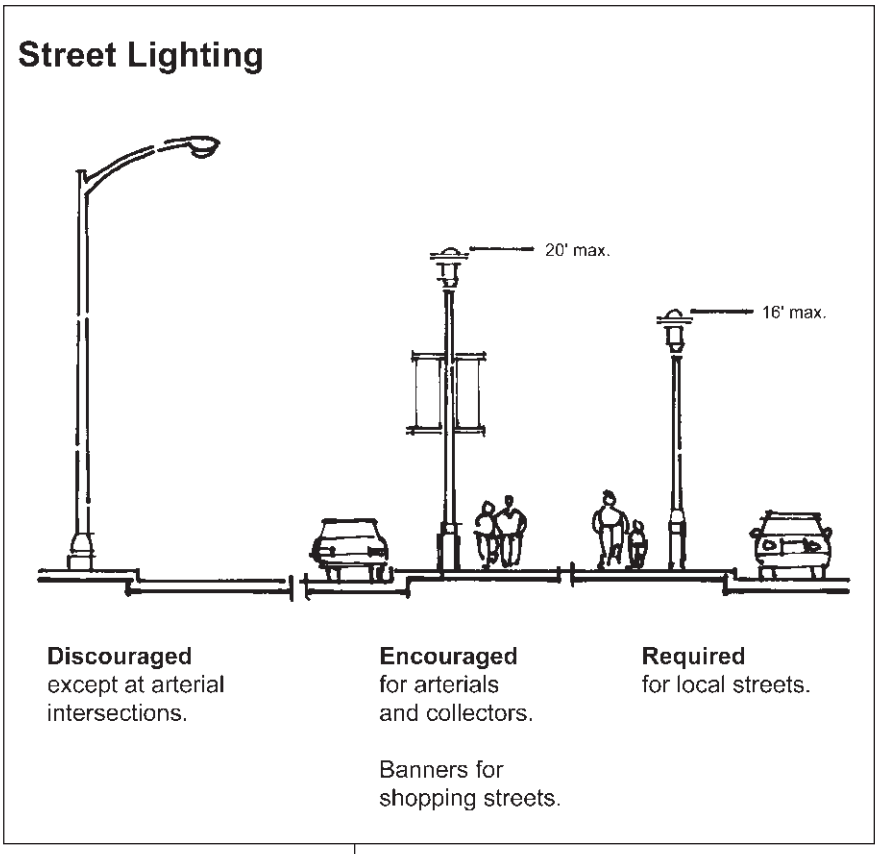


Diagram 5

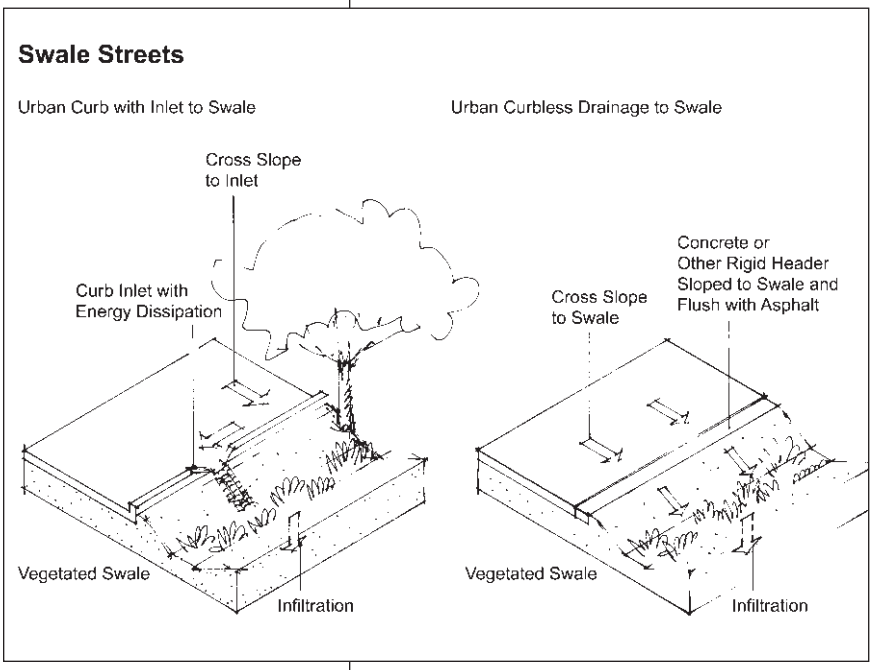


Diagram 6

4. Transit Network

Transit plays a vital role in reducing regional traffic congestion, but to be widely used it must be fast, frequent, and reliable. Volcano Heights' emphasis on walkability and urban development will make more frequent transit service viable. The Bus Rapid Transit (BRT) system proposed for the area uses dedicated bus lanes and emerging technologies to make travel times competitive with the car. As proposed, BRT would whisk area residents and workers to and from central Albuquerque, and to and from jobs in the I-25 corridor.

Transit Network. The proposed Transit Network is depicted on **Exhibit 19** Transit stops and/or stations should be located to maximize the number of residents and workers who can walk less than one-quarter mile to a stop or station. On these routes, crossings of a limited-access arterial or arroyo will need special design treatment to ensure safe and easy pedestrian crossings. Transit stops or stations should be placed near the center of Village Centers, Town Center, and adjacent to where retail conveniences, schools and public amenities are planned. See the Transit Network for recommended placement of transit stops, stations, and Bus Rapid Transit (BRT) transfer stations. At the same time reasonably direct routes and acceptable system-wide travel speeds should be maintained.

Long Range High Capacity Transit Plan. The map showing transit recommendations at a regional scale is shown as **Exhibit 20**. The most significant change in the Long Range map is the recommendation to designate Unser Blvd. as suitable for High Capacity Transit, and to link it within the Plan Area with an extension of BRT on Paseo del Norte extending west of Coors. The roadway design recommendations for Unser and PdN in the Plan incorporate potential for BRT. These Plan recommendations focus on ultimate conditions. Transit improvements may be phased and interim routing may be different than ultimate routes in some locations. The Long Range High Capacity Transit Plan shall be amended to be consistent with adopted recommendations.

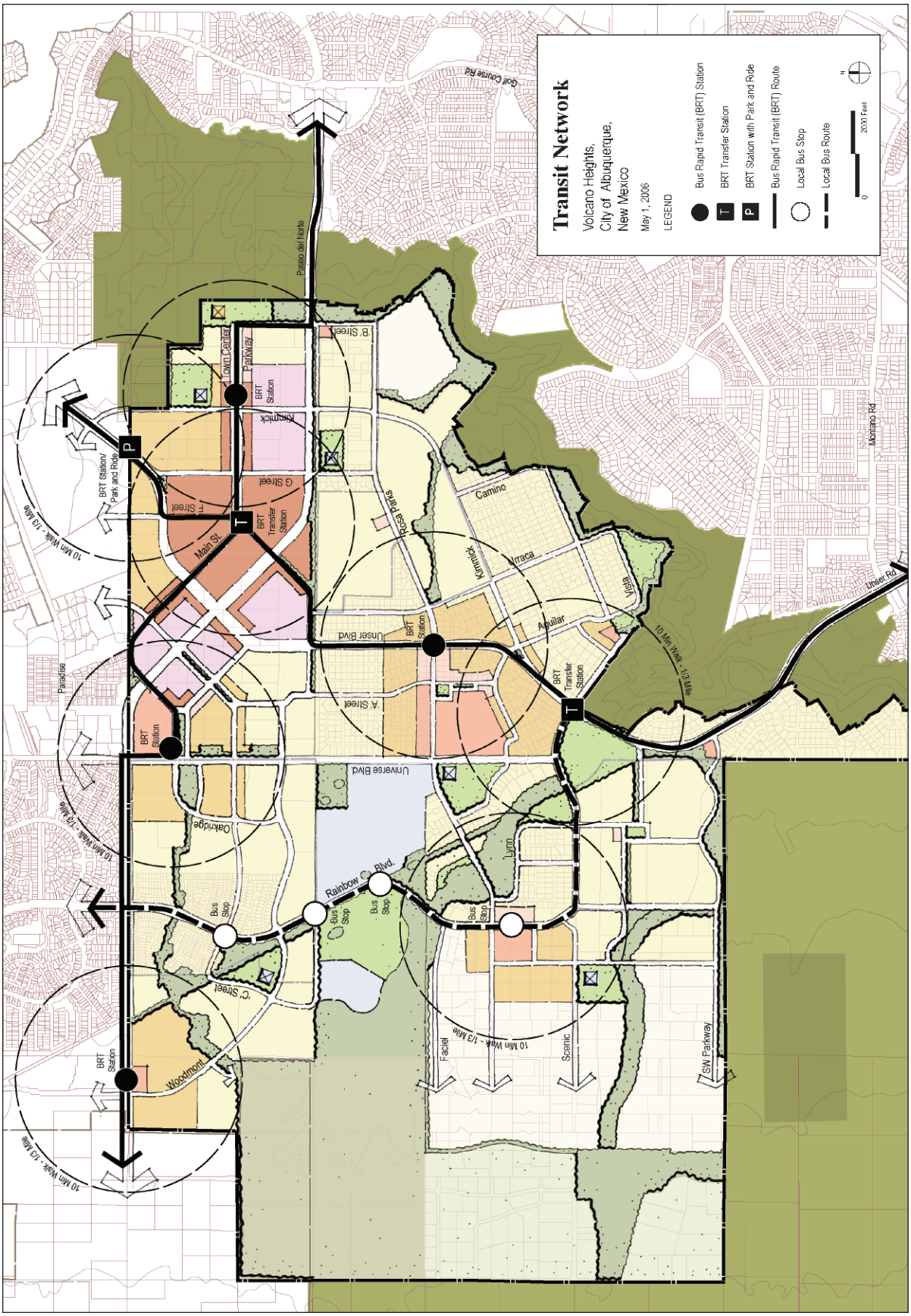

Transit Network
Volcano Heights,
City of Albuquerque,
New Mexico
May 1, 2006
LEGEND
Bus Rapid Transit (BRT) Station
BRT Transfer Station
BRT Station with Park and Ride
Bus Rapid Transit (BRT) Route
Local Bus Stop
Local Bus Route
0
2000 Feet
N
Golf Course Rd
Paseo del Norte
Montano Rd
Unser Rd
Town Center
Parkway
BRT Station
B. Street
Kimmick
G Street
F Street
BRT Station/ Park and Ride
Main St.
BRT Transfer Station
Rose Parks
Camino
Urraca
Vista
Aguilar
Unser Blvd
BRT Station
BRT Transfer Station
10 Min Walk - 1/3 Mile
A Street
Paradise
BRT Station
Universe Blvd
Oakridge
Rainbow Blvd.
Lynn
Bus Stop
Bus Stop
Bus Stop
Bus Stop
C Street
BRT Station
Woodmont
10 Min Walk - 1/3 Mile
Faciel
Scenic
SW Parkway

Exhibit 19

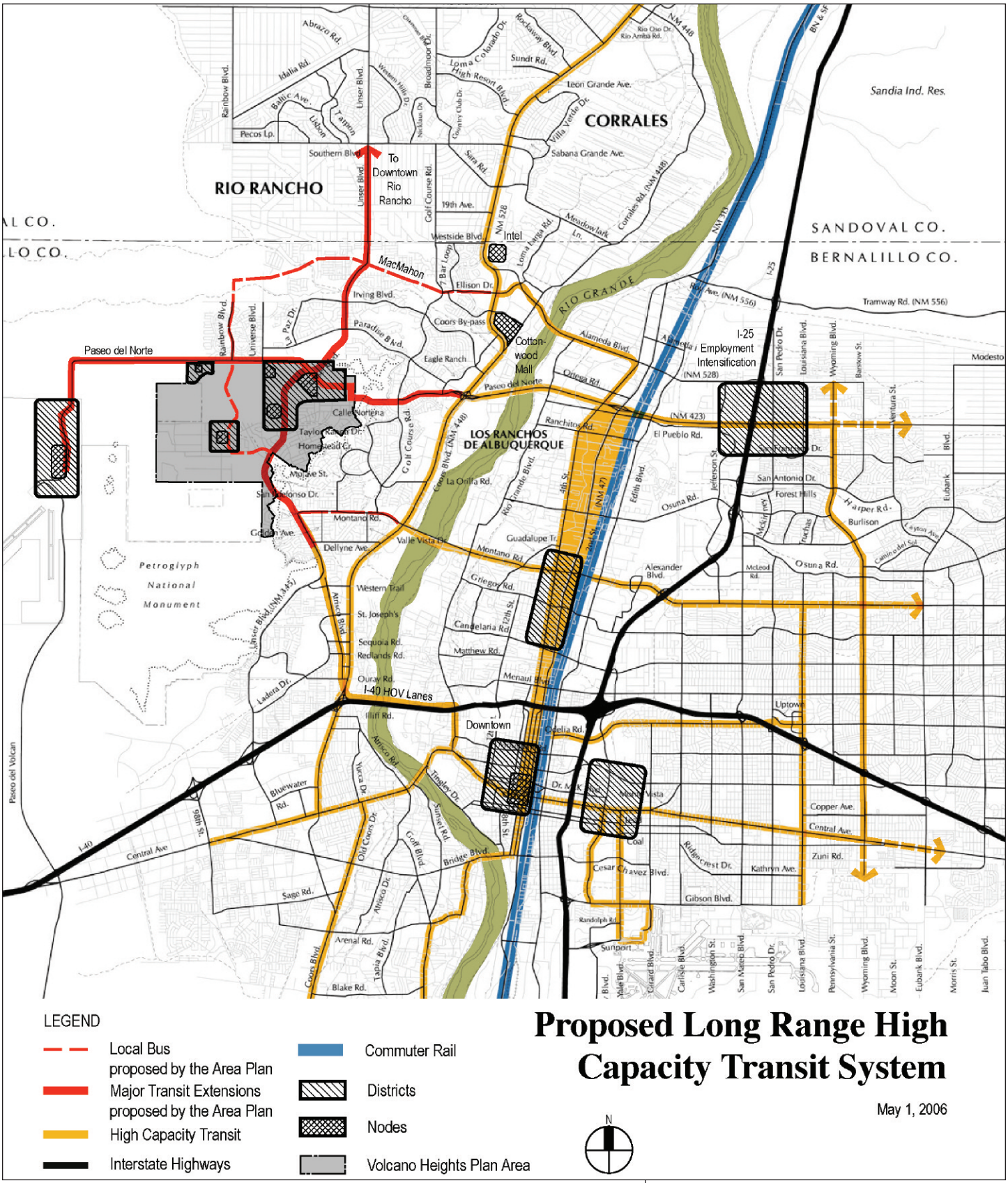


Exhibit 20

Proposed Long Range High Capacity Transit System

High Occupancy Vehicle (HOV) Lanes & Bus Rapid Transit (BRT). Travel lanes dedicated solely to buses and other high occupancy vehicles speed travel time for those who car pool or use transit. Paseo del Norte (PdN) and Unser should be designed to accommodate travel lanes for BRT/ HOV lanes, as indicated by Cross-Sections 1, 2, 6. A BRT and future light rail station shall be maintained near the center of the Town Center to enhance its pedestrian- and locational-advantages. Lanes solely for the use of BRT should connect HOV lanes along PdN and Unser with the center of the Town Center, and possibly the Village Center at Universe and PdN.

Transit-Oriented Development To attain high transit ridership, transit-supportive uses should predominate within a third of a mile (1,760 feet) of transit stops, including Town Center, Village Center, Main Street, Office, Schools and Urban Residential uses (See Diagram 7). Consideration should be given to transit system policies, which emphasize more frequent service along high-density corridors.

Convenience and Access. Pedestrian routes to transit stops should be reasonably direct (along streets and/or off-street paths); circuitous routes should be avoided. Transit stops should be placed near retail conveniences and community amenities.

Signal Preferencing. To improve travel times by transit, light signals in the Volcano Heights area should incorporate signal-preferencing technology ("queue jumping") to give buses priority at intersections.

Pre-Boarding Fare Systems. Consideration should be given to technology that requires bus fares to be paid prior to boarding, thereby greatly reducing boarding and transit travel times.

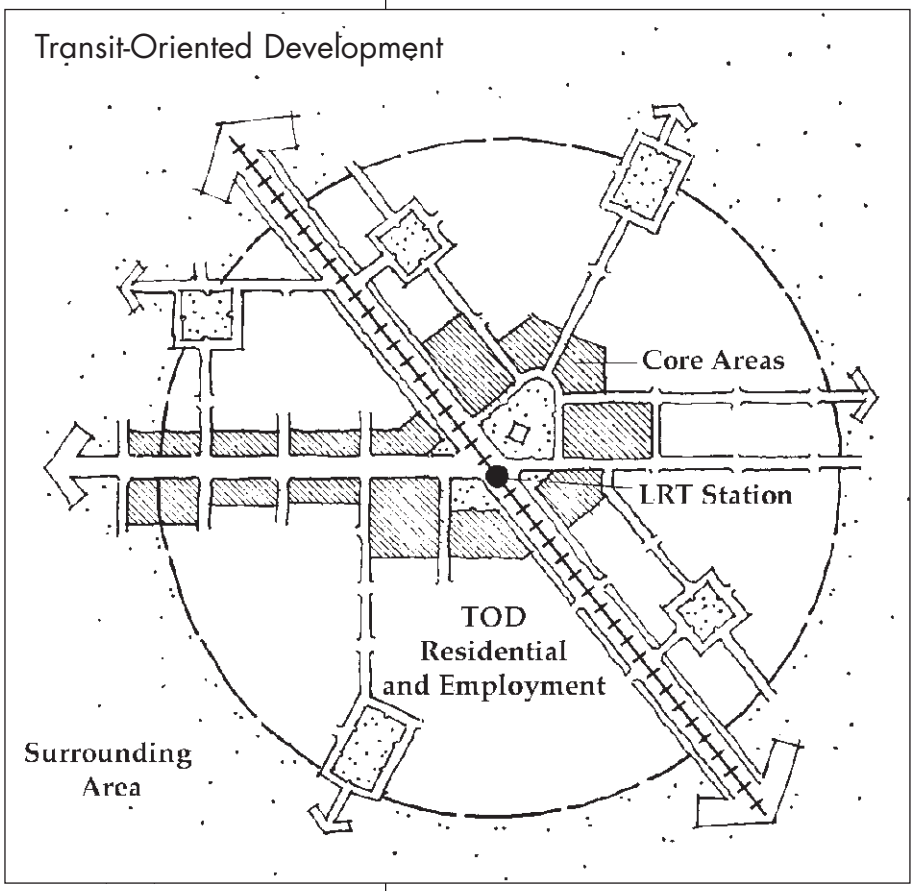


Diagram 7
Transit-Oriented Development

Transit Centers. Transfer between BRT routes should occur at a "transit center" near the center of the Town Center; this transit center may also serve local buses and paratransit (like taxis). Transfer between BRT and local bus should be facilitated by a transit center near where Rainbow, Universe, and Unser converge; the more detailed Plan for this area should consider how this "transit center" might be accomplished.

Park & Ride. The park where Rainbow, Universe, and Unser converge presents a special "park & ride" opportunity, and its design should consider how future parking could be introduced. If BRT on Unser extends beyond the northern edge of the Plan Area, land should be reserved for the creation of a "Park & Ride" lot as a way of intercepting traffic flowing from Rio Rancho and other points to the north. Parking structures can provide greater security for parked vehicles and are desirable at these locations.

Transit Stop & Station Design. The approach to transit stops/stations should offer direct pedestrian routes, and be tree-lined and barrier free. Transit stops and/or stations should be designed as prominent focal points, offering well-lighted shelters with attractive architecture, and lying within or adjacent to plazas or other civic features. Shelter may be incorporated within the architecture of adjacent buildings, through the use of arcades or durable awnings. Transit route and system maps should be displayed at all stops/stations. Bicycle storage boxes should be located at major transit stops.

5. Transportation Demand Management

Comprehensive Programs. The City should require the preparation and conditions for the implementation of a Transportation Demand Management (TDM) plan, when considering approvals relating to large employers or development projects. TDM provisions support alternatives to the car, by offering incentives for ridesharing, transit use, bicycling, and walking. Incentives may include: reduced parking requirements, reduced development fees, development intensity bonuses; and/or the creation of transportation management associations to coordinate efforts among multiple users in the same area.

6. Bicycle Trail Network

The ***Bicycle Trail Network*** includes some separated trails that are also part of the Multi-Use Trail system described in the Open Space section. Separate bicycle trails combined with walking are proposed along the Escarpment edge, along the former alignment of Rainbow, and along planned open space on the western edges of the Plan Area. A bike lane is proposed along Universe (see Cross-Sections 8 and 9 for Minor Arterial). Class 3 bike routes signed for bicycles but without a separate bike lane are recommended for Collector streets such as Rosa Parks, Woodmont, and the Town Center Parkway.

Trail design provisions for bicycles and pedestrians are contained within the Open Space Element.

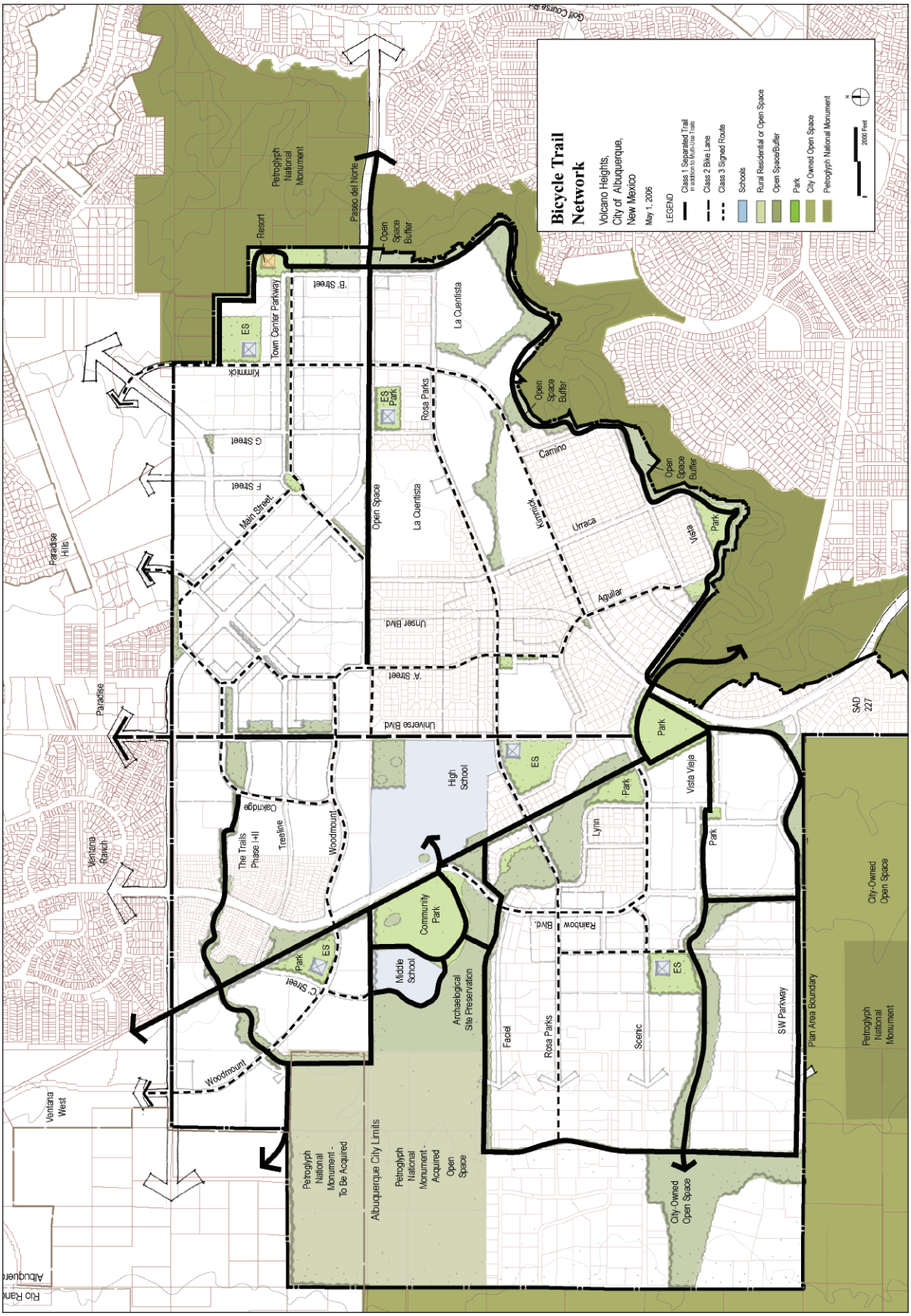

Bicycle Trail Network
Volcano Heights, City of Albuquerque, New Mexico
May 1, 2006
LEGEND
Class 1 Separated Trail
Class 2 Bike Lane
Class 3 Signed Route
Schools
Rural Residential or Open Space
Open Space/Buffer
Park
City Owned Open Space
Petroglyph National Monument
2000 Feet
Petroglyph National Monument
Paseo del Norte
Resort
Town Center Parkway
B. Street
Open Space Buffer
La Cuentista
Rosa Parks
ES
Park
Kimmick
G Street
F Street
Main Street
Open Space
Camino
Urraca
Vista
Aguilar
Unser Blvd
A. Street
Universe Blvd
Paradise Hills
Paradise
Ventana Ranch
Oakridge
The Trails Phase I-II
Treeline
Woodmount
High School
Community Park
Middle School
C. Street
Archaeological Site Preservation
Ventana West
Petroglyph National Monument - To Be Acquired
Albuquerque City Limits
Petroglyph National Monument - Acquired Open Space
Faciel
Rosa Parks
Rainbow Blvd.
Lynn
Vista Vieja
Scenic
SW Parkway
City-Owned Open Space
Plan Area Boundary
SAD 227

Exhibit 21

III
Land Use

1. Intent

Mixed-Use Districts. The Volcano Heights Plan locates most homes and jobs within walking distance of retail, commercial and community services. Within a comfortable walking distance, village and town centers are surrounded by residential and office uses at urban intensities. While complementary urban uses are critical to encourage walking for many trips, it is also critical to make comfortable and inviting walking environments as described in the Urban Design Element.

Diagram 8 shows ways to organize a mix of retail, housing, and employment to achieve diversity and balance in a town center.

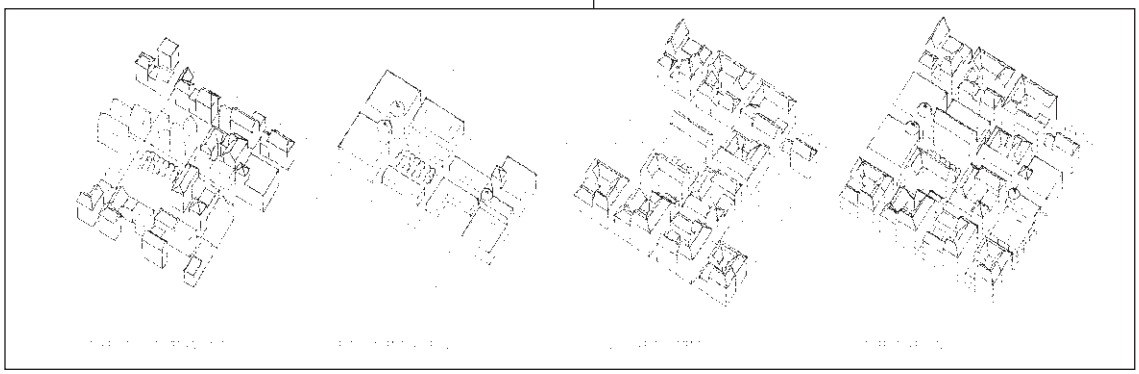
Residential Diversity. The Volcano Heights Area Plan encourages a range of housing opportunities for various ages and incomes. Apartments, townhouses and small-lot single-family will occur within and immediately adjacent to Village Centers and the Town Center. Single-family homes on larger lots are permitted farther from Village and Town Centers, where greater reliance on the car is expected. Along the western edge of Volcano Heights, rural lots will be maintained and create a natural edge to the public open space.

Neighborhood and Regional Retail Centers. Convenience stores and other neighborhood retail, like a grocery store, drugstore and hardware store, will be located within Village Centers, although not every Village Center may have all of these uses. Commercial and entertainment uses, such as department stores, bookstores, cinemas, restaurants, office buildings, and business services (uses that serve a broader area) will be concentrated within the Town Center. Locations where retail is permitted are limited to ensure that retail conven-


Mixed-Use Town Center

Mixed Use Town Center

Diagram 8
Mixing retail, housing, and employment



ience is attained for these Village and Town Centers. Some entertainment and retail uses are reserved solely for the Town Center to assure the creation of a downtown-like environment that can support transit and attract office campuses to Albuquerque's West Side. To make more livable and transit-supportive centers, retail destinations must be paired with housing, employment, and pedestrian-supportive design.

West Side Employment Center. Office areas are designated to attain a better balance of jobs and housing on the West Side. While office uses have not been built along Albuquerque's western edge, a sufficient level of developer interest is expected because of the Town Center's superior regional access (Bus Rapid Transit and Arterial boulevards), and because of exceptional urban amenities, recreational features, and housing opportunities in the area.

2. Land Use Plan

Exhibit 22 The Land Use Plan establishes a framework for future growth that encourages walkable, transit-supportive districts, while also maintaining many of the Plan Area's scenic qualities and conserving the Area's unique ecological and archeological assets. The Land Use Plan plays a vital role in realizing the broad vision for the Volcano Heights summarized in the Fundamental Goals.

A general description of each land use designation is provided here. Specific requirements are contained in the standards that follow.

Town Center. The Town Center will create a major urban center that will bring employment, comparison shopping, and entertainment to the West Side. Housing, civic facilities (like a library), and attractive streets and plazas will provide lifestyle options especially well suited to "empty nesters" and young professionals. Access to both Unser and Paseo del Norte will help attract a range of retail and entertainment uses, while future Bus Rapid Transit service will support the higher employment and housing intensities anticipated.


Mixed-Use Village Center

Mixed-Use Village Center

Office. Office campuses will bring new job opportunities to the West Side. Because many workers will travel in a "reverse commute direction," office development in Volcano Heights will reduce projected congestion on bridges crossing the Rio Grande. Paseo del Norte offers a visible address.

Village Centers. Village Centers will put local retail, conveniences, schools and a "sense of place" within walking distance of most homes. Besides shops, each Village Center will include housing, a small park, and civic uses, such as day care and community facilities.

Neighborhood Mixed-Use. Mixed-use areas at the neighborhood scale extend a sense of neighborhood center to locations that may not be able to support major retail, but might support small offices, shops, community facilities, or townhouses with ground-floor home occupations.

Urban Residential. A variety of urban housing types are permitted within a network of livable, pedestrian-friendly streets, including: courtyard housing, loft apartments,

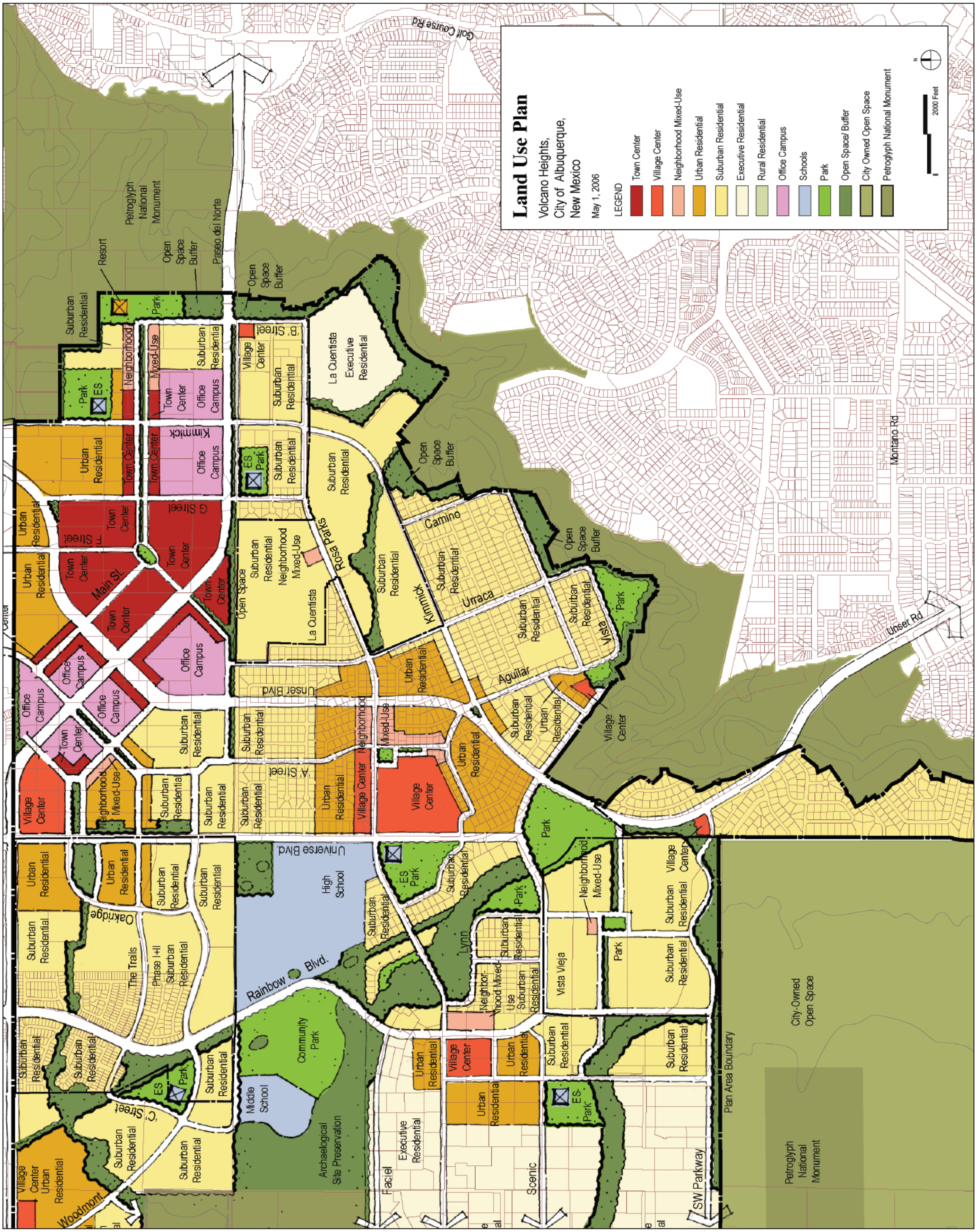

Land Use Plan
Volcano Heights,
City of Albuquerque,
New Mexico
May 1, 2006
LEGEND
Town Center
Village Center
Neighborhood Mixed-Use
Urban Residential
Suburban Residential
Executive Residential
Rural Residential
Office Campus
Schools
Park
Open Space/ Buffer
City Owned Open Space
Petroglyph National Monument
2000 Feet

Exhibit 22

patio homes, townhouses, duplexes and detached single-family homes on small lots.

Suburban Residential. A range of detached single-family lot sizes are allowed, with provisions that require additional natural or recreational open space as densities increase.

Executive Residential. Bigger homes on larger lots will be provided as an amenity to help recruit skilled professionals to Volcano Heights, which will encourage employers to locate to the Town Center and the greater West Side. Clustered housing is encouraged to conserve the area's natural terrain and beauty.

Rural Residential. Rural uses and open space will form a backdrop to Volcano Heights, where limited urban services also suggest very large lots.

Schools and Parks. Park and school locations are recommended in anticipation of the Area's population. Elementary schools will share facilities with parks, and in order to encourage walking, will be located adjacent to the Village Centers, trail systems or open space.

Open Space / Buffer. Land will be set aside to protect arroyos and sensitive lands abutting Petroglyphs National Monument. These open spaces will include hiking trails, and will help conserve important ecological and archeological features

3. Required Uses in Mixed-Use Areas

To function well, mixed-use centers need to offer walk-to destinations including civic, retail and entertainment — along centrally-located housing; in the Town Center office uses help meet regional employment and transportation goals.

Table 4: Required Uses in Mixed-Use Areas

	Town Center	Village Center	Neighborhood Mixed-Use
Civic Uses	10% min.		20% min. Civic, Retail and/or Enter.
Retail, Entertainment (with/without upper-story uses)	20% min.	40% min.	
Residential Uses (with/without ground-floor comm'l)	20% min.	20% min.	20% min.
Office w/inTown Center (with/without uses on other floors)	30% min.	no min.	no min.

Percentages apply to gross developable area, i.e. exclusive of site constraints, and inclusive of streets and parking. Compliance to be demonstrated by Master Development Plans submitted for each discrete Town Center, Village Center and Neighborhood Mixed Use areas, including those areas containing multiple property owners. The Planning Director may grant exceptions to property owners with parcels that are a half-acre or smaller.

4. Development Densities and Intensities

Minimum densities and intensities are needed to support transit and to provide market support for local retail and conveniences; maximum densities and intensities are needed to maintain an appropriate scale for development and to assure that roadways and other infrastructure have adequate capacity.

Table 5: Development Densities and Intensities

Mixed-Use & Office Intensities	Town Center	Village Center	Neighborhood Mixed-Use	Office Campus
Minimum Average Floor Area Ratio	0.60	0.30	0.30	0.80
Maximum Allowable Floor Area Ratio	2.00	1.00	1.00	2.00

Floor Area Ratio shall be defined as the gross floor area of all buildings at all levels, divided by the total site area of a project, minus undevelopable areas. Parking structures shall not be counted toward the gross floor area calculation.

"Average densities" are used to encourage higher density near centers and lower density away from centers, while permitting a range of housing types and lots sizes; doing so broadens housing options, adds visual variety, and allows responsive site plans that concentrate housing near local destinations and locate urban activity away from ecological and archeological assets.

Table 6: Residential Densities

Residential Densities	Town Center	Village Center	Neighborhood Mixed-Use	Urban Resid.	Suburb. Resid.	Exec. Resid.	Rural Resid. (3)
Minimum Average *(1, 2)*	25 du/ac	20 du/ac	15 du/ac	10 du/ac	1.5 du/ac	no min.	no min.
Maximum Average *(1, 2)* without development	50 du/ac	40 du/ac	30 du/ac	20 du/ac	3 du/ac	.7 du/ac	0.1 du/ac
Maximum Average *(1, 2)* with conservation development *(3)*	n/a	n/a	n/a	n/a	4 du/ac	1 du/ac	.4 du/ac

(1) Densities apply to gross developable area for residential uses, exclusive of site constraints, and inclusive of streets & parking.

(2) A range of housing types may be used to meet this requirement (see below).

(3) Requirements for clustering, and illustrations, are shown below.

The average residential density is calculated for each site plan for two or more parcels and the average calculated must fall within the range of "Minimum Average" and "Maximum Average" contained in the Residential Densities table above. For an individual parcel (or a lot without subdivision) the Minimum Average is the Minimum density and the Maximum Average is the Maximum density allowed.

Average Density – Urban Residential (Diagram 9)

Standards for average densities permit a greater variety of housing types, as has been depicted for Urban Residential areas. Minimum average densities help ensure that the overall amount of development will support retail conveniences and frequent transit service. Maximum average densities assure that development will not exceed the capacity of planned infrastructure. Standards for average density also encourage housing diversity in Suburban Residential areas, because a range of single-family lot sizes are permitted.

Intensifying Platted Lots (Diagram 10)

Permitted average densities sometimes exceed the density of previously platted areas. While intensification is not required, it can occur in a variety of ways: by splitting lots, by adding accessory units, and by combining lots so that higher density housing types can be accommodated.

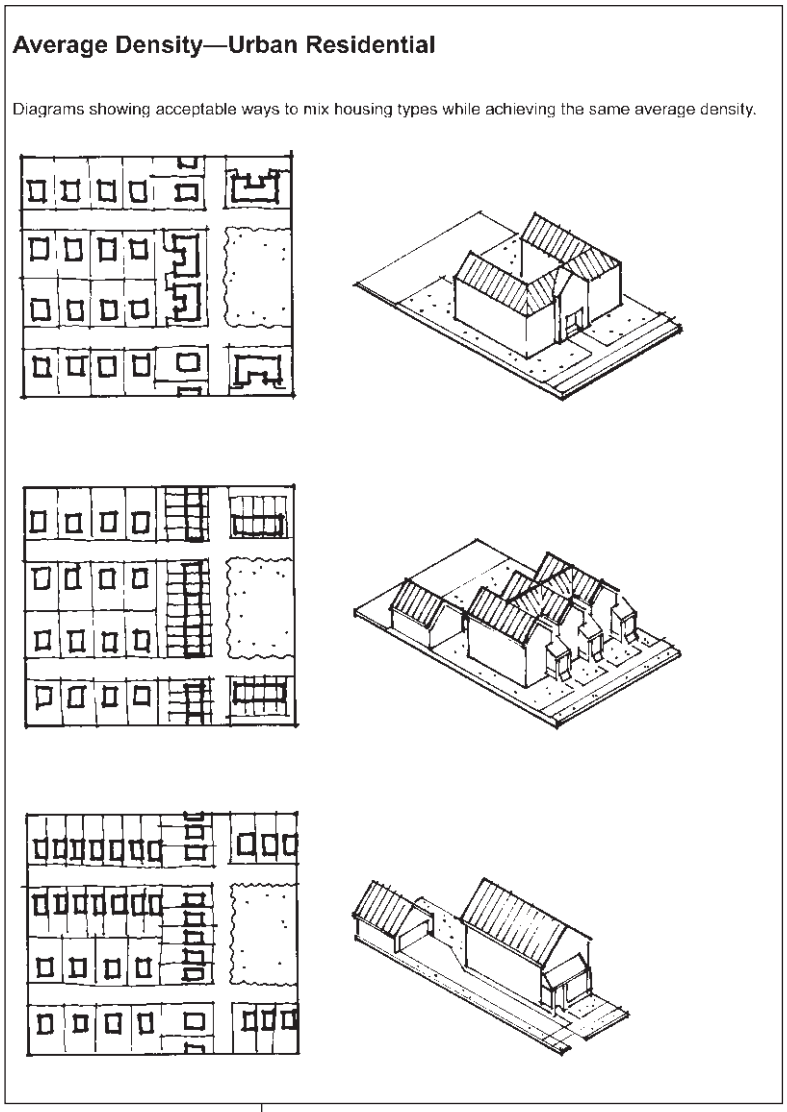


Diagram 9

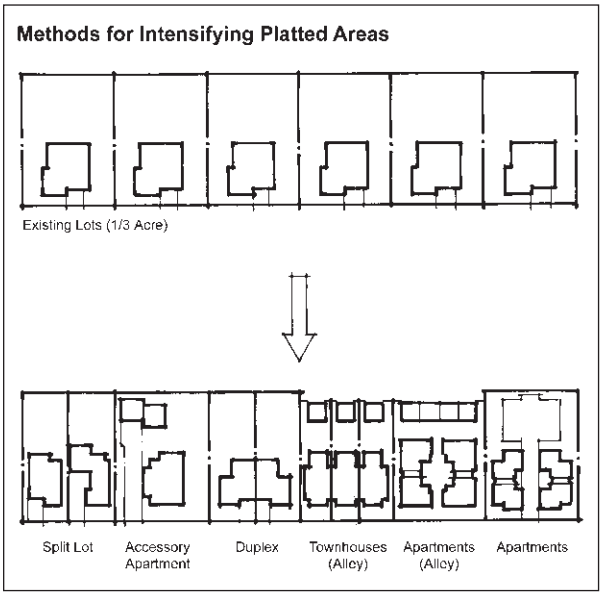


Diagram 10

Open Space Requirements for Urban and Mixed-Use Residential

Requirements are placed on higher density residential development to provide both private and shared open space. Shared open spaces are important in urban settings to expand opportunities for passive recreation, to bring people together and to help create a sense of community. Courtyards and plazas are especially encouraged to create a southwestern character, and roof gardens can take advantage of the outstanding views and natural setting.

Table 7

	Town Center	Village Center	Neighborhood Mixed-Use	Urban Resid.
Private Open Space per Dwelling *(1)*	60 square feet			
Shared Open Space per Dwelling *(2)*	80 square feet			

(1) Must be for private use. May be yard, deck, balcony, porch, or patio. Must have unobstructed dimensions of at least 6 feet.
(2) Must be accessible to all project residents, and have unobstructed dimensions of at least 40 feet. May be park, courtyard, plaza, play area, community facility, roof garden, natural open space, or some combination.

5. Acceptable Building Types

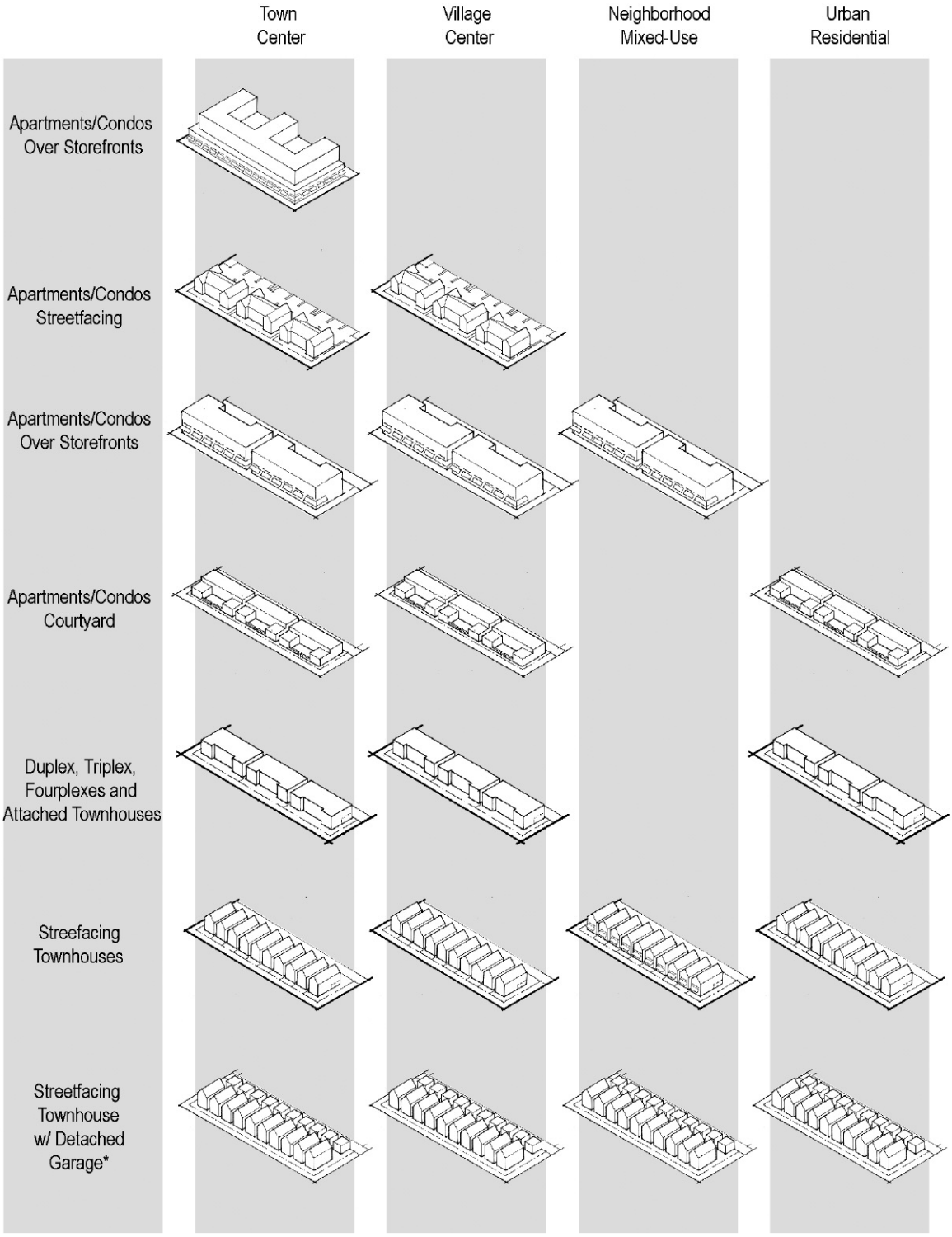
Table 8: Residential Building Types

The following table describes which residential building types are acceptable within each land use designation. The illustrations ***Exhibits 23 and 24*** on the following pages are not meant to be an exhaustive list but rather to help clarify what is meant by the type categories below.

P = Permitted	Town Center	Village Center	Neighborhood Mixed-Use	Urban Resid.	Suburb. Resid.	Exec. Resid.	Rural Resid.
Apartments/ Condos (4+ stories) over Storefronts	P						
Apartments / Condos (2-3 stories) over Storefronts	P	P	P				
Apartments & Condos (2-3 stories), attached & stacked, street- & courtyard-facing	P	P		P			
Small Apartments 4-8 Units	P	P	P	P			
"Live-Work" Townhouses/ duplex over storefronts	P	P	P				
Townhouses,(attached single-family, street- & courtyard-facing)	P	P	P	P			
Duplex, Triplex, Fourplex	P	P		P			
Single-Family Detached (recessed garage, side drive or alley-fed; street- & courtyard-facing, small lot 3500 to 5000 sq ft)				P	P		
Single-Family Detached (Standard Lot 5001 sq ft to 20,000 sf)					P		
Accessory Unit / Carriage House (to count as half of a unit in density calculations)	P	P	P	P	P	P	P
Single Family Detached Large Lot (20,000 sq ft to 60,000 sf)						P	
Single Family Detached Rural Lot (+60,000 sq ft)							P
Conservation Cluster					P	P	P

*Accessory Unit/ Carriage Houses are allowed with residential building types indicated in the illustrations on the following pages

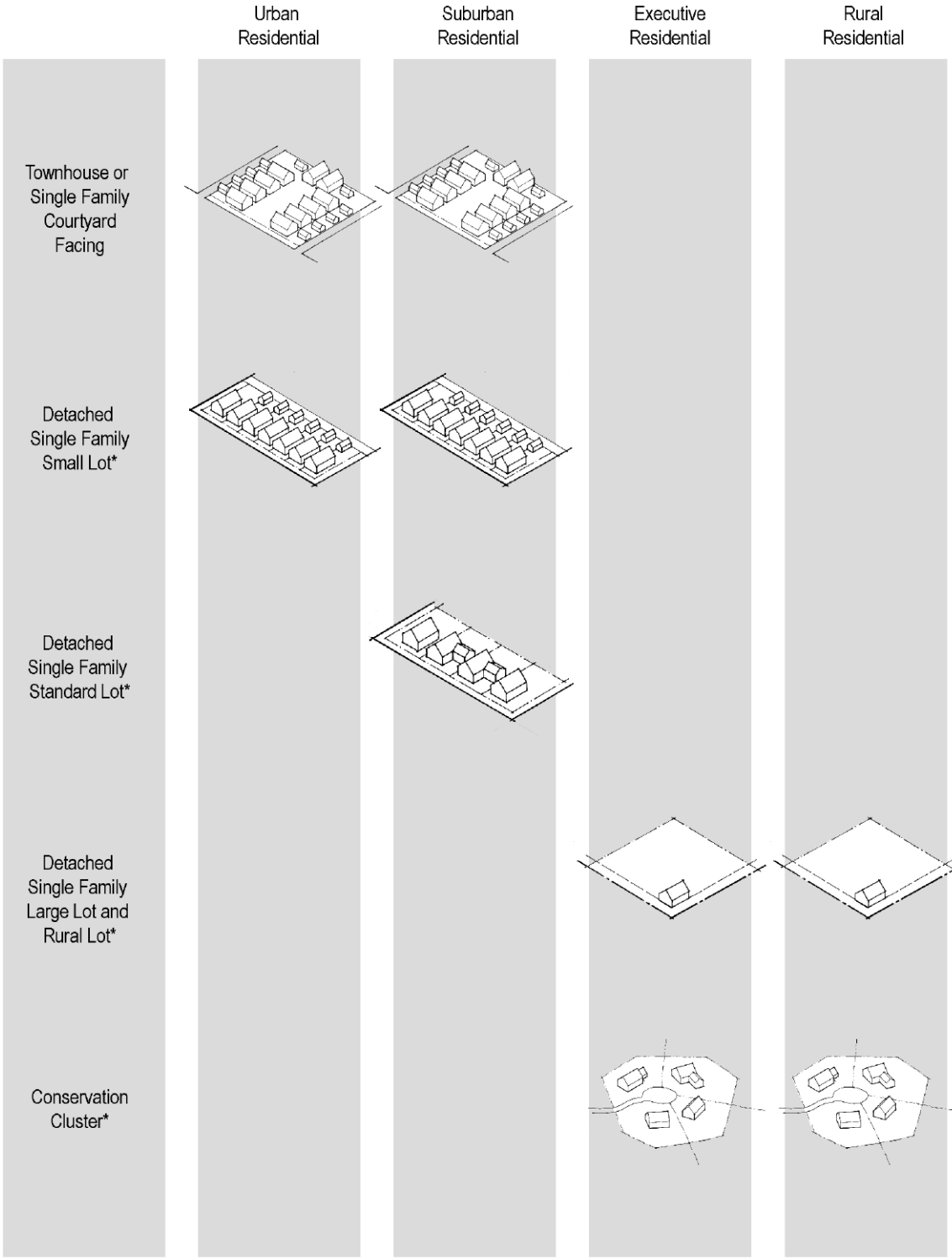
Higher Density Residential Building Types



*Accessory Unit/ Carriage House Allowed.

Exhibit 23

Lower Density Residential Building Types



*Accessory Unit/ Carriage House Allowed.

Exhibit 24

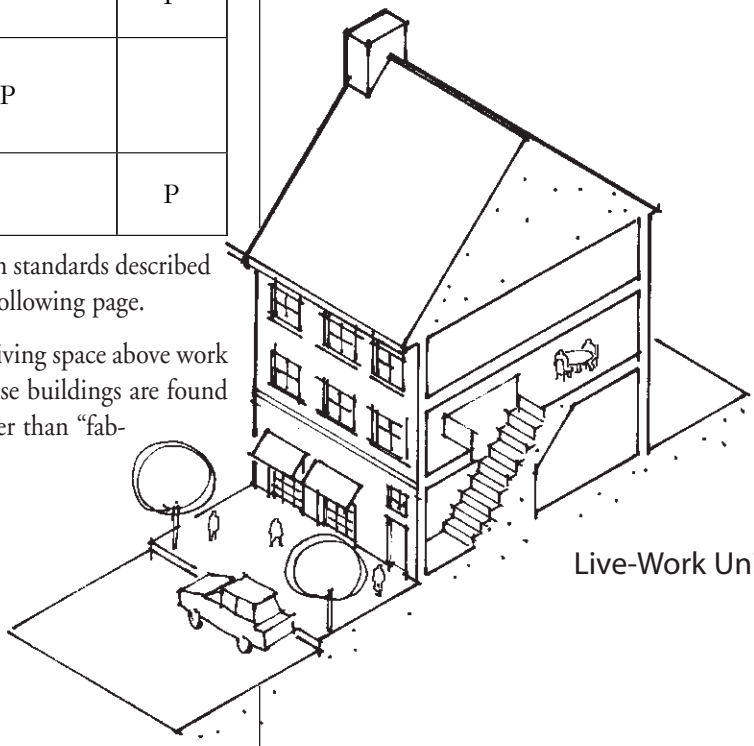
Table 9: Acceptable Non-Residential Building Types (See Exhibit 25)

The following table describes which non-residential building types are acceptable with-

P = Permitted	Town Center	Village Center	Neighborhood Mixed-Use	Office
Mixed Use (Office Over Storefronts)	P	P	P	
Large Office Building	P			P
Small Office Building	P	P	P	P
Research and Development				P
Civic, Cultural, Community and Religious Buildings*	P	P	P	
Parking Garages with Active Uses	P	P		P

in each land use designation; these building types are derived from standards described in the Urban Design Element; see illustrations provided on the following page.

Below is an illustration of a building that provides two stories of living space above work or retail space. Other illustrations of non-residential or mixed-use buildings are found on the following page. Civic buildings tend to be "object" rather than "fabric" buildings.



Live-Work Unit

Non-Residential Building Types

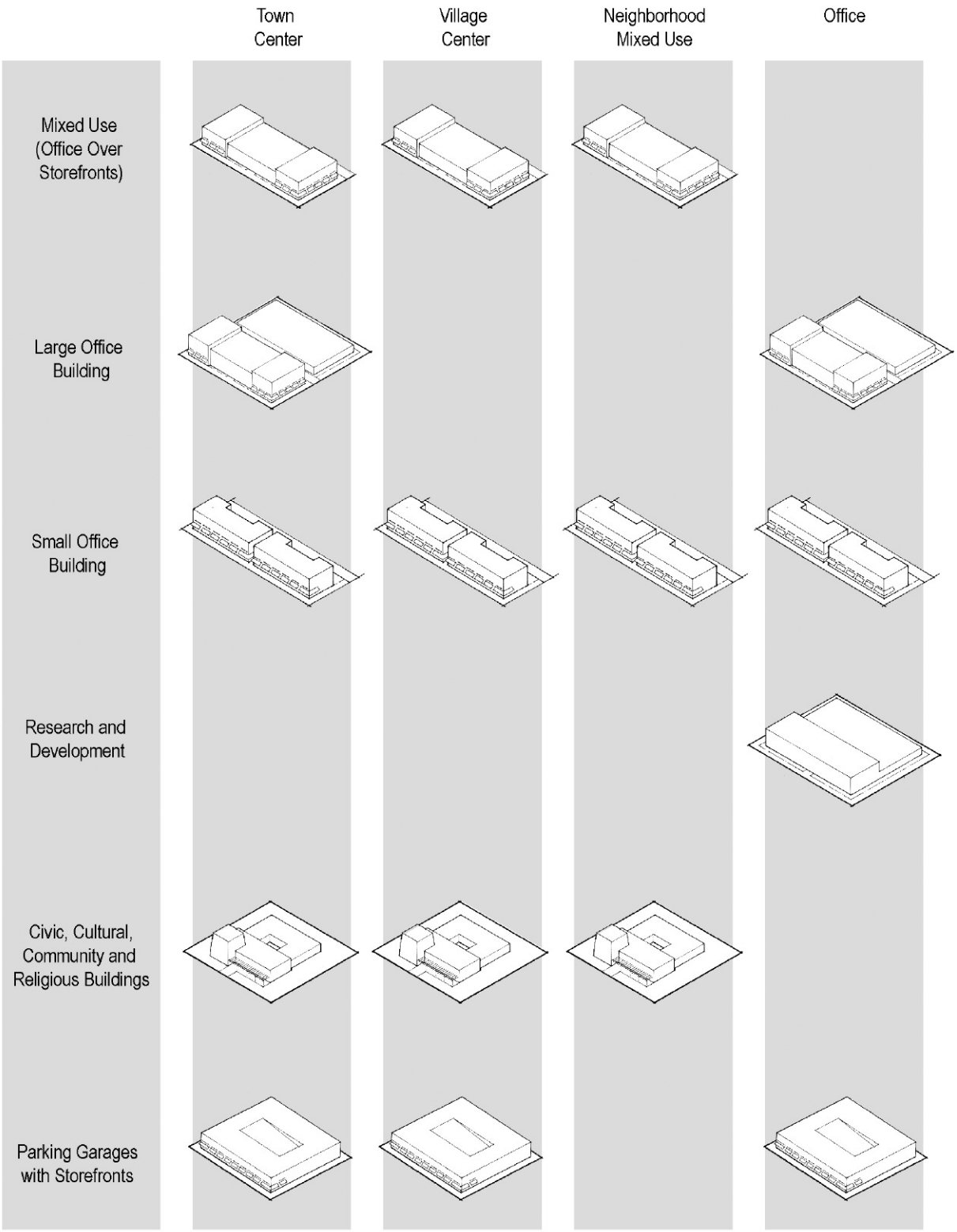


Exhibit 25

6. Permitted & Limited Uses

Specified uses respond to a variety of considerations that include:

- Target and foster adequate market support for neighborhood serving businesses located in Village Centers;
- Attract regional destinations and employment to the Town Center;
- Encourage local amenities while recognizing limited market support for some uses in Main Street areas;
- Maintain a scale for development that promotes walking in the Town and Village Centers;
- Minimize nuisances in residential areas posed by some activities;
- Promote a healthful and vital school environment; and,
- Allow a range of lot sizes and housing types (while maintaining the density averages noted above).

Table 10: Permitted and Limited Uses

Key: P = Permitted Uses; L=Limited Uses (Limited based on requirements in table footnotes); R = Review Required; x = Not Permitted

Use	Town Center	Village Center	Neighborhood Mixed Use	Office	Urban Resid.	Suburb. Resid.	Exec. Resid.	Rural Resid.
RETAIL – ENTERTAINMENT								
Amusements incl. billiard halls, game arcades, and carousels, but excl. driving ranges, miniature golf courses, go-cart tracks, & other land-intensive amusements.	L *(1, 2)*	L R *(1, 2, 3)*	x	x	x	x	x	x
Banquet halls, and exhibit/ convention halls.	L *(1, 2)*	L R *(1, 2, 3)*	x	x	x	x	x	x
Bars, pubs, dance halls, discotheques, cocktail lounges.	L *(1, 2)*	L *(1, 2, 3)*	L *(1, 2, 7)*	x	x	x	x	x
Cinemas, theatres, & auditoria, except sports halls.	L *(1, 2)*	L *(1, 2, 3)*	x	x	x	x	x	x
Financial, insurance, & real estate services, incl. banks & offices.	P	L *(3)*	L *(4)*	p	x	x	x	x
Food stores, incl. supermarkets, convenience markets, meat and fish stores, produce stores, bakeries, and health food.	L *(8)*	L *(3)*	L *(7)*	x	x	x	x	x

Health clubs, swim clubs, tennis clubs and gymnasia.	P	L *(3)*	x	P	x	x	x	x
Lodging, incl. hotels, spas, exec. suites, & bed & breakfasts.	P	L *(3)*	L *(4)*	x	x	x	x	x
Personal services, including dry cleaners, laundries, hair stylists, photo developing, & shoe repairs.	P	L *(4)*	L *(7)*	L *(4)*	x	x	x	x
Restaurants and other "sit-down" eating establishments.	P	L(4) *(3)*	L *(7)*	L *(4)*	x	x	x	x
Retail merchandise, incl. variety stores, garden supplies, home furnishings, household electronics & appliances.	P	L *(3)*	L *(7)*	x	x	x	x	x
Retail trades incl. florists, magazines, camera, gifts, pet sales & supplies, books, stationary, art & hobby, antiques, stamps & coins, jewelry, and similar trades.	P	L *(3)*	L *(7)*	L *(4)*	x	x	x	x

Use	Town Center	Village Center	Neighborhood Mixed Use	Office	Urban Resid.	Suburb. Resid.	Exec. Resid.	Rural Est.
OFFICE USES								
Health care facilities, including hospitals and laboratories, but not incl. medical offices & clinics.	L *(6)*	L *(6, 3)*	x	P	x	x	x	x
Large office buildings, with building footprints exceeding 10,000 sq.ft.	P	X	X	P	x	x	x	x
Office uses, including corporate, law, engineering, design, real estate, etc.	P	L *(3)*	L *(4)*	P	x	x	x	x
Research & Development, incl. light industrial activities combined with office, administrative, or research facilities.	L *(6)*	x	x	P	x	x	x	x

research facilities.								
RESIDENTIAL USES								
Large apartment & con dominium buildings, with building footprints exceeding 4,000 sq.ft.	P	P R	x	x	P	x	x	x
Small apartment & condominium buildings, with building footprints 4,000 sq.ft. or less	P	P	P	x	P	x	x	x
Townhouses (single-family attached, street or courtyard facing) .	P	P	P	x	P	x	x	x
Detached Small Single-Family on lots 6,000 sq.ft. or less	x	x	x	x	P	P	x	x
Detached Standard Single-Family on lots 5,001 to ½ acre.	x	x	x	x	x	P	x	x
Detached Single-Family on lots 30,000 sq. ft. to 5 acres	x	x	x	x	x	x	P *(5)*	x
Detached Single-Family on lots 3 acres or greater.	x	x	x	x	x	x	x	L *(5)*
CIVIC USES								
Cultural facilities, incl. libraries, art galleries, and museums.	P	P	L *(7)*	x	x	x	x	x
Churches and other religious places of worship.	P	P	P	P	P	P	P	P
Community services, incl. community centers, daycare, senior, teen & rec.. centers; police, fire, & private schools.	P	P	L *(7)*	x	x	x	x	x
Public Schools (applies to locations other than those designated in the Land Use Plan)						P		
Parks or Plazas (public or private)	P	P	P	P	P	P	P	P

(1) Use shall be at least 100 feet from residential use and mitigate exterior noise level to less than 60 dB.

(2) Use shall be at least 200 feet from school.

(3) In Village Centers, to distribute desirable uses among multiple Village Centers and to maintain their neighborhood scale: food stores shall not exceed 50,000 square feet; and other facilities including retail stores shall not exceed 25,000 square feet per store or facility.

(4) Business or facility shall not exceed 10,000 square feet and be incidental to surrounding uses.

(5) Lot size range for Conservation Lotting; larger lots are required without Conservation Lotting (see below).

(6) Uses serving and accessible to the public shall occupy at least 50% of the street-facing building frontage

(7) Business or facility shall not exceed 2,000 square feet and be incidental to surrounding uses.

(8) Food stores shall be limited to 20,000 square feet.

7. Illustrative Plans for Activity Centers

Illustrative Plans depict ways that mixed-use Town Center and Village Centers can be created by taking advantage of specific conditions and features unique to each setting. They explore important design relationships for each of the major mixed-use centers within the Plan Area. Important considerations include:

- allowable arterial intersection spacing;
- available existing street rights-of-way;
- street and trail network connectivity standards;
- permitted land uses;
- property ownership patterns;
- open space dedication and acquisition priorities;
- potential retail access and visibility;
- Bus Rapid Transit routing and station spacing
- taking advantage of view-lines to the volcanoes and Sandia Mountains; and
- using buildings to frame streets and open spaces to encourage urban vitality and a sense of place.

Urban Form Diagrams

Essential urban form attributes are depicted in the Illustrative Plans for each Center.

Street Network. Each Diagram shows a network of major streets, which will distribute traffic adequately. Each Diagram recognizes arterial intersection spacing needs and takes advantage of existing rights-of-way where available. Street alignments may be altered, but must conform to network and block size standards in the Transportation Element.

Required Storefronts. The Diagram also shows locations where buildings must be built within 5 feet of the public sidewalk, and where storefronts are strongly encouraged. Defined in the Urban Design element, storefronts include retail shops as well as other active ground-floor uses. The "Build-to" locations offer good access and visibility from major roads—a prerequisite for most retail.

Plazas and Small Urban Parks. Plazas or small urban parks should be created near the center of Villages and the Town Center. The Diagrams suggest the location of small urban parks. These locations acknowledge likely street alignments. Land dedication requirements, Special Assessment Districts, or other vehicles are presumed to implement urban parks or plazas.

Architectural Focal Points. Building height should be increased at important arrival points and at the end of prominent views. Open space and generous setbacks should be avoided where architectural focal points are called for. Building designers should give special attention to the place-making potential of these locations.

Town Center

The intersection of Paseo del Norte (PdN) and Unser will bring two of the region's most-traveled roadways. The Town Center takes advantage of this exceptional access to bring a new regional center to the West Side, which offers a unique mix of regional retail, entertainment, employment, cultural facilities, and housing. The eastern "corner" of the Paseo del Norte – Unser, where the Town Center is located, has the most favorable access ("right in" and "right out" in the PM commute direction), a less fragmented ownership pattern, and exceptional views.

While the mixed-use Town Center designation offers flexibility, the Illustrative Plan shows how smaller stores and retail anchors might be arranged around an urban park or plaza. Importantly, two Bus Rapid Transit routes (running north-south on Unser and east-west on PdN) would converge at the heart of the Town Center and enliven the town square. As envisioned in the Transportation Element, the Town Center's transit station would offer exceptional transit access and would provide the primary point of transfer between the two BRT routes.

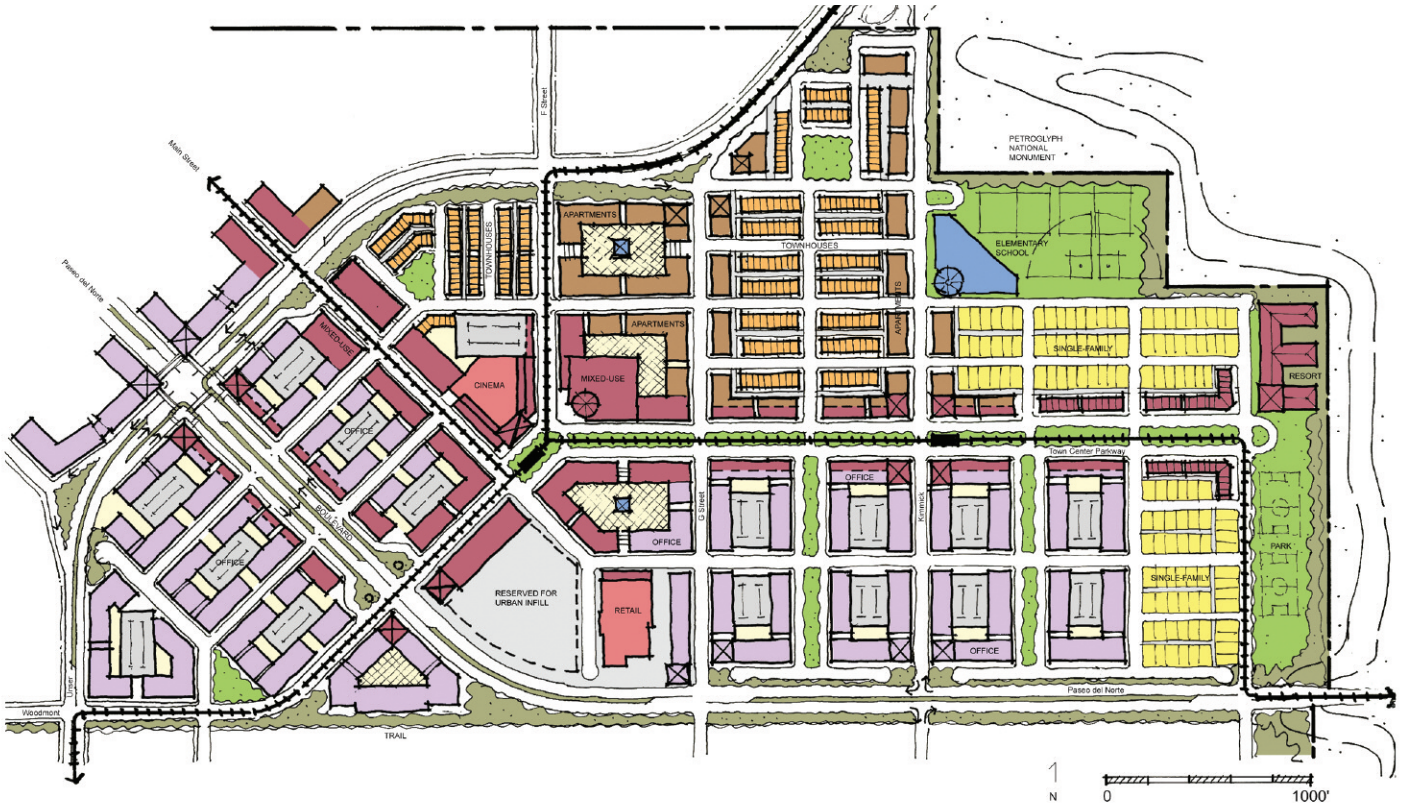
To help balance jobs and housing and reduce traffic congestion on the West Side, the Plan encourages employment within the Town Center and in Office areas along PdN. The Illustrative Plan shows office buildings facing streets with mid-block parking. To establish a major job center, office development must rely on multi-level parking garages to meet minimum intensity requirements.

Buildings should face PdN to the extent possible. Access lanes with on-street parking will create a boulevard and a unique urban place near its intersection with Unser. Local streets might also be used to accommodate street-facing office buildings farther east.

Housing is another important ingredient for making a vibrant Town Center with round-the-clock activity. A variety of housing types are illustrated, including larger apartment/condominium projects with mid-block courtyards that have parking below. Also shown are attached townhouses. East of the Town Center, single-family homes would be built and could deliver up-scale housing for executives within walking distance of new corporate offices. An elementary school will serve the area with educational and recreational facilities.

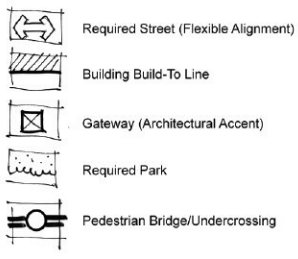
A linear park extends between housing (to the north) and employment (to the south). The park will offer passive recreation to the abutting neighborhoods, and BRT will run along the linear park with a station that offers convenient transit access to many residents and worker. Importantly, the linear park will maintain views of the Sandia Mountains, which have scenic and cultural importance. Trails and a new park near PdN will provide public access and avoid the visual intrusion of development along the edge of PNM. A small resort is permitted where the linear park meets Monument, and should possess exceptionally high design quality because of its visual prominence.

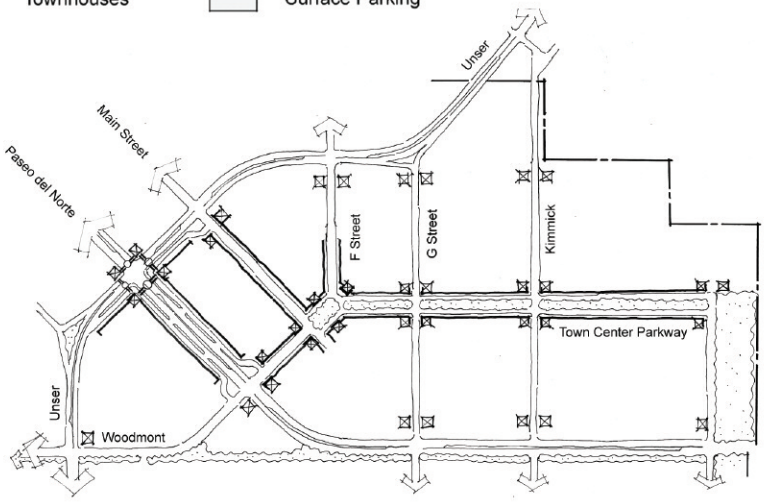
Illustrative Plan



Retail
Mixed-Use
Office
Single-Family
Plaza
Park
Public
Apartments
Townhouses
Open Space
Parking Garage
Surface Parking

Urban Form Diagram





Town Center

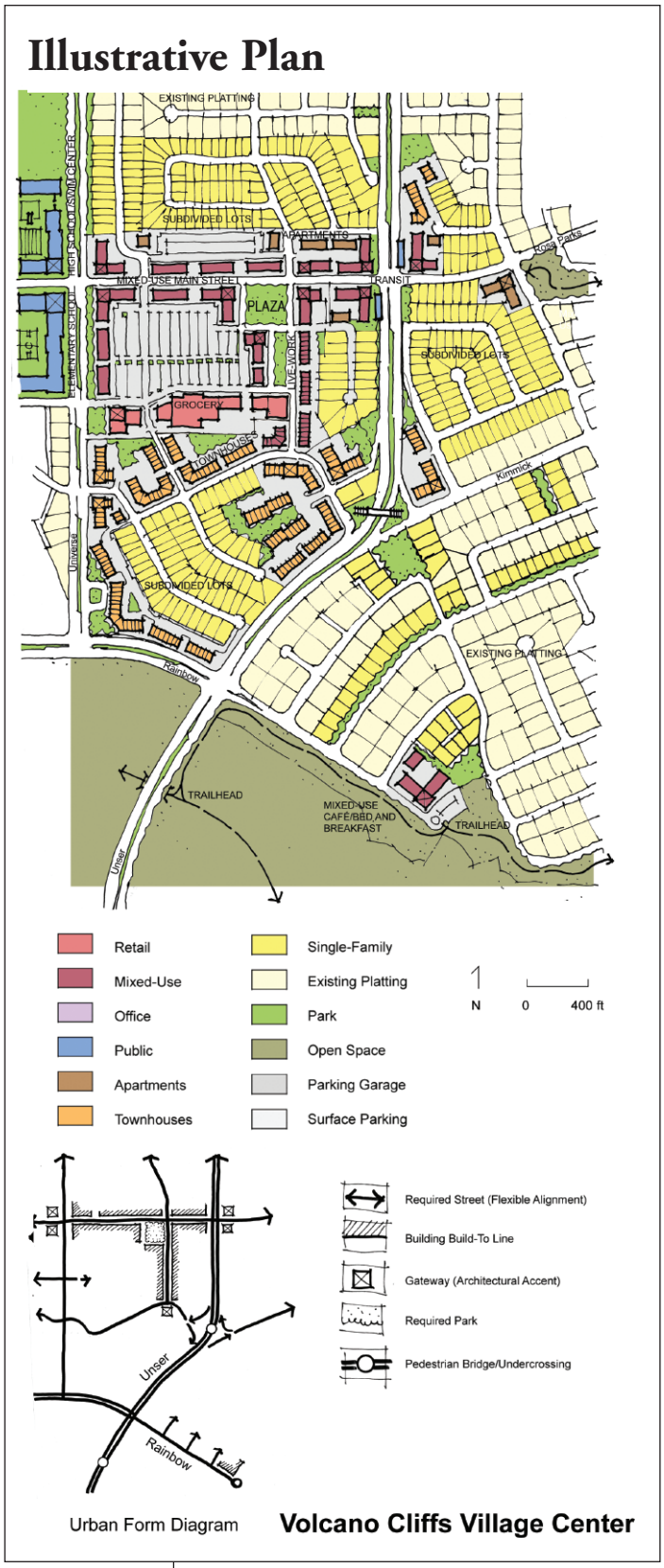
Illustrative Plan
Town Center

Volcano Cliffs Village Center

In the Volcano Cliff's area, a mixed-use main street is called for along Rosa Parks (formerly Squaw Road) because of this street's direct access to Unser Parkway and Universe Road, and because a larger parcel just south of Rosa Parks can offer larger anchor retail to support the small shops along Rosa Parks. A plaza is shown on the larger parcel. At the main street's western edge, a recreation center associated with the high school and community uses associated with an elementary school will also provide anchor stores. Bus Rapid Transit will help anchor uses at the main street's eastern end.

It is expected that property owners will assemble some smaller parcels along the Rosa Park's main street and throughout the Volcano Cliff's area, where higher-density housing like townhouses and apartment can be built. As the extent of lot assemblage cannot be predicted, the Illustrative Plan also shows areas where the existing lot pattern is retained — but with lot "splits" where two homes are built on the existing one-third acre lots.

Kimmick is expected to have a limited "right-in/right-out" intersection with Unser. A pedestrian overpass is proposed at this intersection to provide reasonably direct access to retail in the Village Center. Residents east of Unser might also be served by a small convenience store or café where Rainbow meets the Monument. Services in this exceptional location might also serve visitors attracted by views and trails, and a small bed & breakfast might also be possible.



Illustrative Plan
Volcano Cliffs Village Center

Universe Village Center

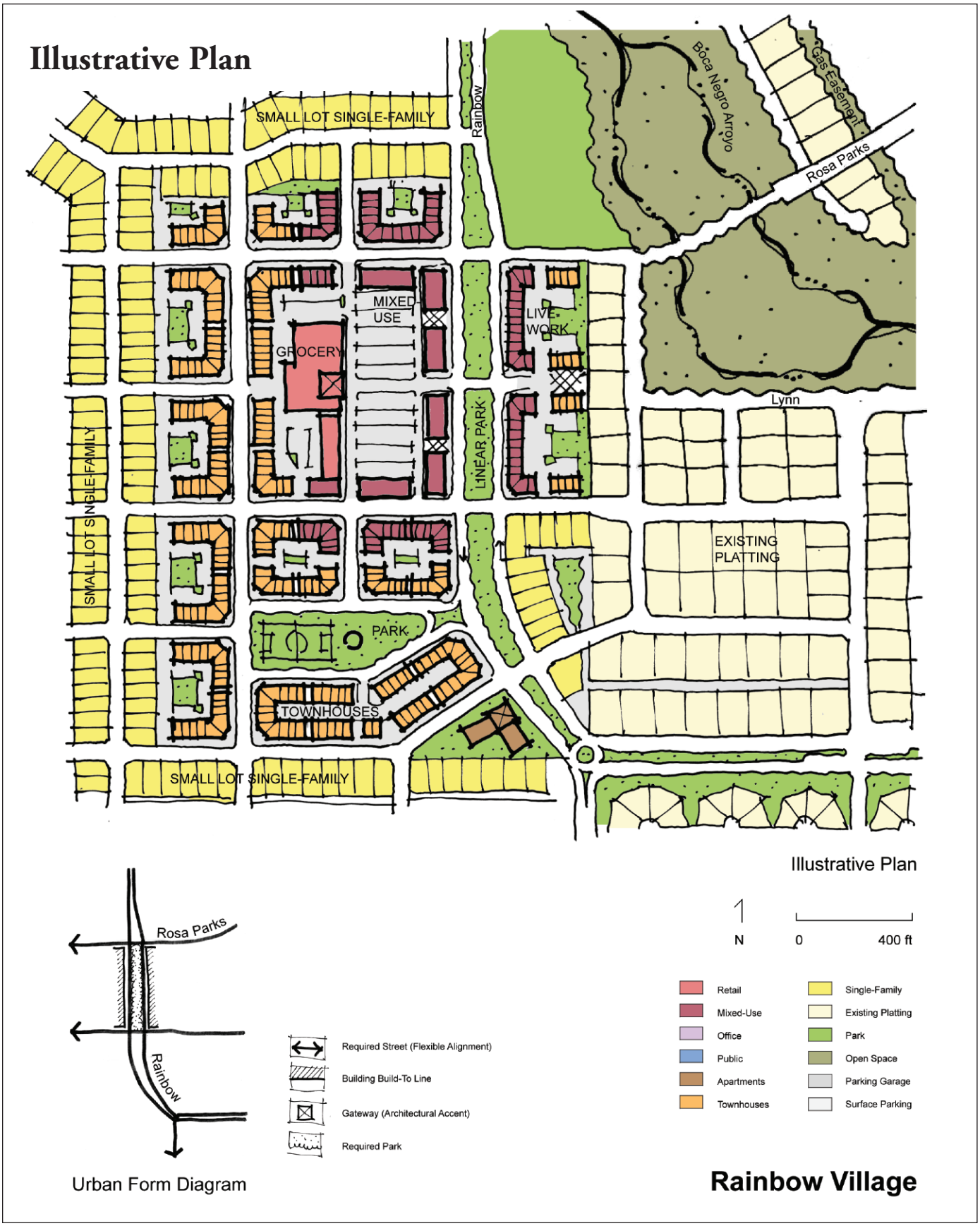
The corner of PdN and Universe may support neighborhood retail. While anchor retail, like a grocery store, might face a parking lot, small shops should face the street and a proposed plaza. Anchor retail might also be placed at the eastern end of the plaza, which has a "Town Center" designation and a high-intensity mixed-use building is permitted. Farther east, high-intensity office development is shown, with exceptional visibility from PdN. High-density housing, like townhouses and apartments, are encouraged within walking distance of retail and the plaza. "Live-work" housing with at-home businesses are encouraged where housing faces the plaza or office uses. An ideal Bus Rapid Transit station location is shown near retail uses and the center of Universe Village.

Rainbow Village Center

Rainbow Village will bring retail and civic uses to the southwestern portion of the Area Plan. The future alignment of Rainbow will bring drive-by traffic volumes necessary to support neighborhood retail. While a retail anchor, like a grocery, may face parking, retail shops should face streets. Retail frontage along Rainbow is especially advantageous. Rainbow is slated to have six travel lanes. Pedestrians will be able to cross Rainbow more easily if a narrow linear park is used in lieu of a median. The park might contain urban features and amenities that support street-facing retail. Street-facing retail also relies on on-street parking. High-density housing, like townhouses and apartments, are encouraged within walking distance of retail and the linear park.

Illustrative Plan

Illustrative Plan
Universe Village



Illustrative Plan
Rainbow Village

IV
Urban Design

1. INTENT

Urban design considers the inter-relationship among buildings, streets, private open space (like yards and courtyards), and publicly-accessible open spaces (like parks, plazas, and conservation areas). For Volcano Heights, urban design standards focus on ways to make places where walking is a more attractive option, where a sense of community is fostered, where resources are used more efficiently, and where the scenic beauty of the area is celebrated. The Urban Design Element seeks to establish functional relationships that foster healthy communities, add economic value, and to enhance Albuquerque's aesthetic character. These objectives are essential, not only for the well-being of local residents and workers, but also as an important ingredient for attracting and retaining businesses in a global economy.

Neighborhoods & Mixed-Use Centers. Walkable mixed-use neighborhoods and mixed-use centers provide the basic building blocks for more livable – and environmentally sustainable – places. Design plays a vital role in their creation. At a large scale, the arrangement of complementary land uses and transportation can influence how easily people can walk to local destinations or transit. At the scale of the street, landscaping and street-facing building entrances and windows create community-supportive places that support neighborhood life, discourage crime, and make walking an attractive alternative to the car. At the scale of the building, porches, overhangs and other architectural features offer protection from heat and reduce energy use.

Pedestrian-Supportive Environments. Good design influences how people perceive a neighborhood or city. Design can help make mixed-use centers (with shops, businesses and housing) vibrant and make residential neighborhoods more welcoming. Perhaps the most important "framework" for community life is how buildings face streets and open spaces. Windows should create the possibility that someone is watching, and therefore discourage unwanted behavior. Ground-floor entrances and (where viable) shops should help make streets more active. Buildings should frame streets spatially, and building design and construction should communicate a sense of pride and permanence. Furthermore, buildings should reflect Albuquerque's unique climate and architectural traditions, and thoughtful site design should offer views toward the volcanos, Sandi Mountains, and Rio Grand River.

Business Destination. Businesses are increasingly concerned with the quality of life and housing opportunities that are available their workforce. Thus, urban environment increasingly where businesses chose to locate. Volcano Heights character, the West Side's well-educated workforce, and regional access provided by Unser, Paseo del Norte and regional transit, will help recruit businesses to the Area and improve the West Side's jobs-housing balance.

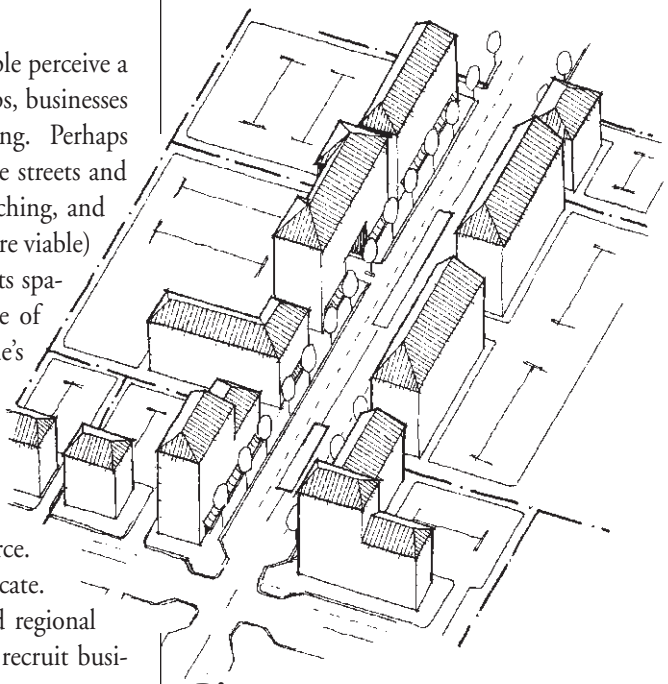


Diagram 11
Desirable Building Street Pattern

Great Streets. The design of streets influences community life. Streets can do more than move traffic. Residential streets can provide a safe place where neighbors come together and where children play, but they must be designed to calm traffic. Shopping streets can provide a stimulating place where people come together to people watch and participate in community life. Frequently traveled streets are places where residents can enjoy scenic views as part of their daily lives.

Conserving Nature & Celebrating Volcano Heights' Scenic Beauty. The Area Plan contains many provisions for minimizing the environmental impacts of development by setting development back from arroyos and the escarpment contained in the Petroglyph National Park, and by clustering buildings to maintain large contiguous expanses of open space. Many of the area's unique outcroppings will also be conserved. These open spaces and others will form a connected network of open space, which will contain trails, maintain scenic views, and connect residents to the area's unique wildlife and plant life.

Residential Neighborhoods

Street and courtyard-facing residences — with entrances and windows facing pedestrian paths — support neighborhood life and improve safety. They make activity along the street more likely and make walking more inviting – whether it is to run an errand or use transit. Street-facing buildings, keep "eyes on the street" and deter unwanted behavior. Furthermore, when paired with calm streets, street-facing architecture can encourage neighbors to come together and socialize.

Urban Residential Neighborhood

Urban Residential Neighborhood

Not all residential buildings must have an entrance that faces a street. Buildings facing courtyards or a natural open space are also acceptable if a direct path to a street is provided. While all residences need not face a street, all streets must have building windows and entrances that face onto them. Street-facing buildings are essential for safety, visual interest, and neighborhood life. Conversely, blank walls, garage doors, and parking lots are deleterious effect to streets (and parks), and should be avoided or mitigated.

These guidelines seek to ensure these critical dimensions for accomplishing a healthy and attractive neighborhood, while allowing flexibility with regard to style and use.

Diverse housing opportunities also support community health. Housing diversity allows all stages of life to be accommodated within the same community. It also provides opportunities to know and interact with neighbors from all walks of life, which benefits the health of the city as a whole. Traditional neighborhoods often provide a variety of single-family homes, townhouses, duplexes and apartments. Single-family detached homes can also vary considerably in building size, lots size and design. Development projects are increasingly recognizing the benefit of mixing housing types to provide a greater range of options and accelerate the rate at which homes can be sold.

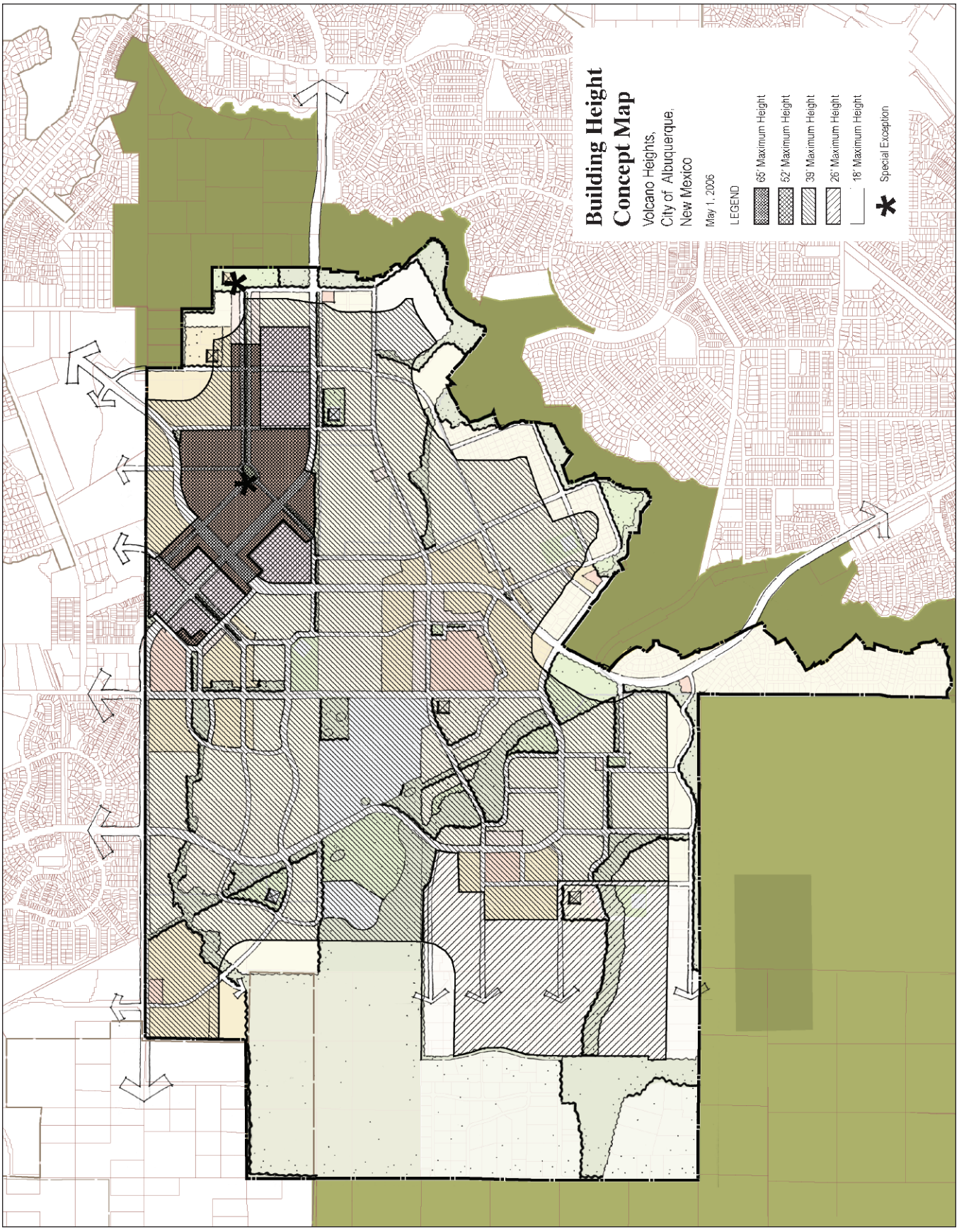

Building Height
Concept Map
Volcano Heights,
City of Albuquerque,
New Mexico
May 1, 2006
LEGEND
65' Maximum Height
52' Maximum Height
39' Maximum Height
26' Maximum Height
18' Maximum Height
Special Exception

Exhibit 26

2. Building Heights & Setbacks

Along the easternmost edge of the Plan Area, buildings shall be limited to 18 feet in height within 200 ft. of any open space just above the escarpment. See **Exhibit 26** ***Building Heights Concept Map***

Table 11: Building Heights and Setbacks

Primary Building	Town Center	Village Center	Live-Work	Urban Resid	Office	Suburb. Resid.	Exec. Resid.	Rural Resid.
Building Height (1,2)	65' max (5 st.) 26' min (2 st.)	39' max (3 story) 26' min (2 story)			52' max (4 st.) 26' min (2 st.)	26' max (2 story)		18' max (1.5 story)
View Sheds (See map.)	within 600' of Monument & southside of Northern Geological Window 18' max (1.5 story)							
Street-Facing Setback with Ground-Floor Storefront (3,4)	0' min. 5' max.			not applicable				
Street-Facing Setback without Ground-Floor Storefronts (4,5)	5' min. 10' max.					10' min. 15' max.	20' min. no max.	
Interior Side Setback (from property line)	attached or 5' min.					5' min.	10' min.	
Interior Side-Side Separation (btw. adjacent buildings on same property)	attached or 10' min.					10' min.	10' min.	
Interior Rear Setback (from property line) (6)	5' min. from alley row; 15' min. if no alley (projects < 10 acres only) *(7)*					10' min. from alley row; 20' min. if no alley		
Interior Rear-Rear Separation (btw. adjacent buildings on same property) (6)	attached or 30' min.					40' min.		
Interior Side-Rear Separation (btw. adjacent buildings on same property) (6)	attached or 15' min.					30' min.		

(1) Occasional projections may extend 10' beyond these height limits, such as chimneys, cupolas, flagpoles, and screened equipment.

(2) Immediately adjacent to the BRT Transfer Station in the Town Center, building heights may extend to 90 feet (7 stories) for a building footprint area not to exceed 20,000 square feet total. For the Resort east of the Town Center, building heights may extend to 39 feet (3 stories) for a building footprint area not exceeding 2,500 square feet (i.e to create tower elements).

(3) Features that may encroach into sidewalk right-of-ways up to the maximum specified: eaves (4' max.), awnings (8' max.), and minor ornamental features (2' max.). Over sidewalks, projections must be more than 8 feet above finished grade.

(4) Buildings used to meet Street Frontage requirements (noted below) should not exceed the maximum street-facing setback indicated. Maximum setback requirements do not apply to buildings that are not being used to meet Street Frontage requirements.

(5) Features that may encroach into street-facing setbacks (but not street right-of-ways), up to the maximum specified: arcades & trellises (to street r.o.w.), porches & stoops (8' max.), eaves (4' max.), awnings (8' max.),, and minor ornamental features.

(6) In all zones, detached garages may come within 5 feet of rear and side property lines, and may abut side property lines within Town Center, Village Center, Live-Work, and Urban Residential zones.

3. Public Building Standards

Public buildings should have greater height at the entry. Positioning of an entry or tower at the end of a street vista can be a very effective statement emphasizing the prominence of public buildings.

Building Height: 39' (3 story) max.; 24' (1.5 story) min.

Setbacks:

Street-Facing Setback (from property line):
10' min.; 30' max. (to meet Frontage requirement below)
Interior Side Setback (from property line): 15' min.; no max.
Interior Rear Setback (from property line): 20' min.; no max.

Street Frontage. Public building fronts shall be built to within 20 feet of a street right-of-way for at least 300 feet or 50% of all available street frontage on each block face, whichever is less. To be counted toward this requirement, buildings must meet Entry & Transparency requirements (see below), and may not be separated from the street by on-site parking or drive lanes. Landscaped plazas and/or passages may be used in lieu of buildings for up to 10% of the required frontage.

Parking Lots. Parking lots should be placed to the rear and side of buildings. Parking lots shall not comprise more than 25% or 130 feet of the total available street frontage.

Walls & Fences. Walls & fences shall conform to requirements noted within Urban Design—Landscape Design. In addition, gates shall be provided to provide direct connections between streets and on-site destinations. A pedestrian path and gate shall be provided at least every 300 feet.

Building Entry. Street-facing entrances shall be built to within 30 feet of a street right-of-way, and should be accompanied by additional building height and/or hardscaped forecourt for visual emphasis.

Vistas. Street-facing entrances (and accompanying height) should be positioned to accentuate vistas (or directed views) at the end of streets or where streets turn.

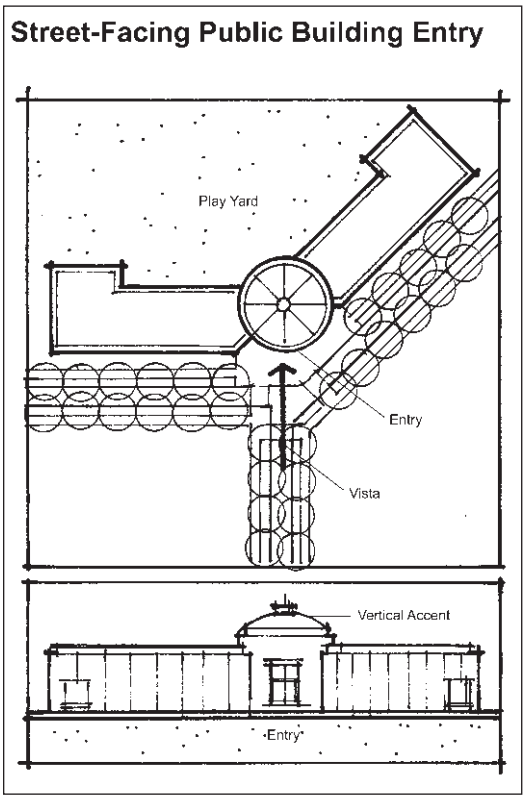


Diagram 13

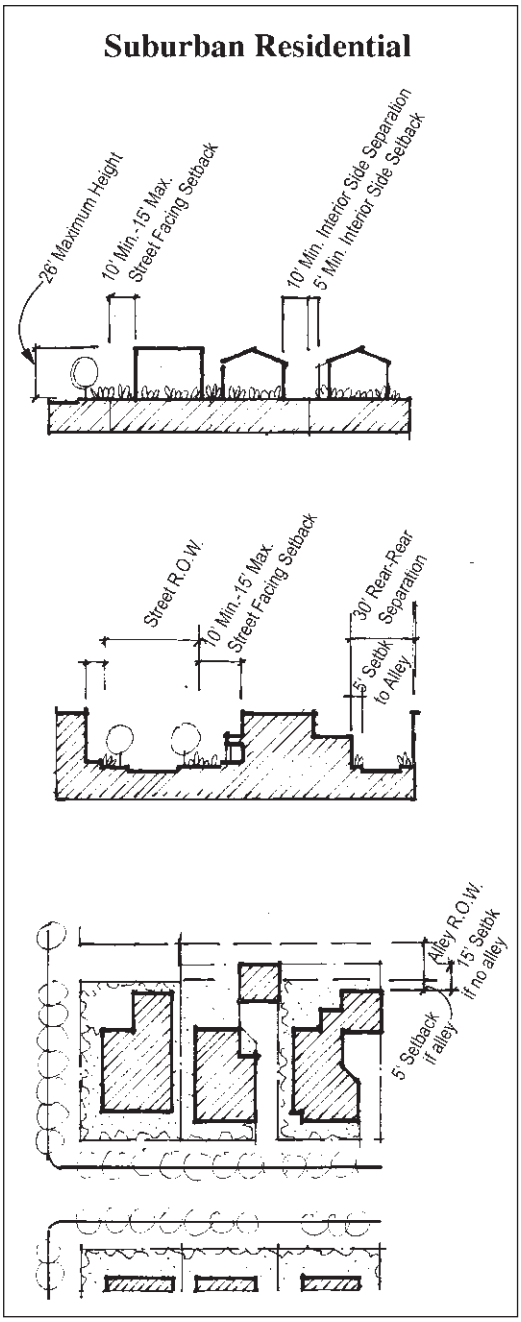


Diagram 12

Building Transparency. At least 35% of the area of street-facing elevations shall be comprised of windows and/or entrances. Measure Transparency by taking the total area of all windows and entrances, and dividing it by the total area of the street-facing building elevation. Glass block, mirrored glass, frosted glass, clerestory windows (sill heights over 5' from floor-level), and other obscured openings may not be used to meet this requirement. (Additional requirements for windows are contained in Architectural Standards.)

Play Areas. Ideally, the edge of play areas should abut natural features or parkland. Where the edge of play area abuts rear-yard fences or walls, landscaping shall maintain clear lines of sight for security.

Civic Tower – Santa Fe

4. Other Essential Building-Street Relationships

Street-facing Development. The Illustrative Plans (p.) contain Urban Form Diagrams that show locations in each Center where building within 5 ft. of a public sidewalk is required.

Storefronts are strongly encouraged in Town Center and Village Center areas and should be street-facing. Uses that qualify as Storefronts are: retail shops, personal services, restaurants, cafes, entertainment establishments, professional offices, day care, health clinics, community uses, and other uses that contribute similar levels of activity and visual interest to the street. To qualify as a Storefront, buildings must also conform to the Building Frontage, Setback, Entry, and Transparency requirements described below.

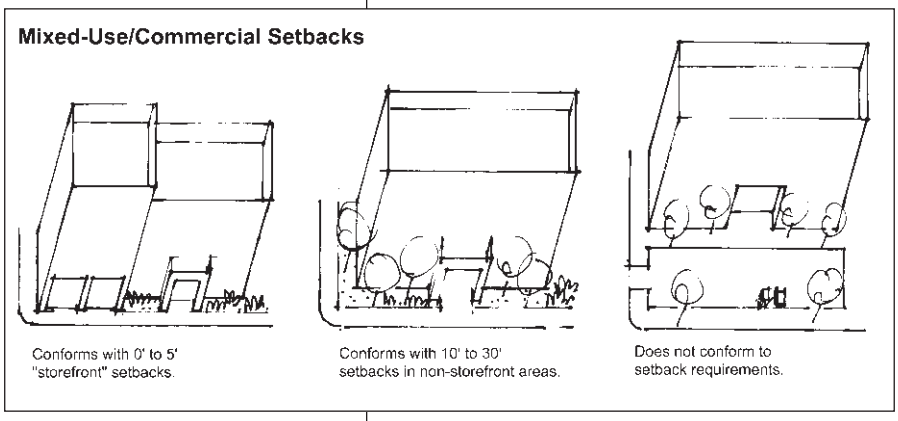


Diagram 14

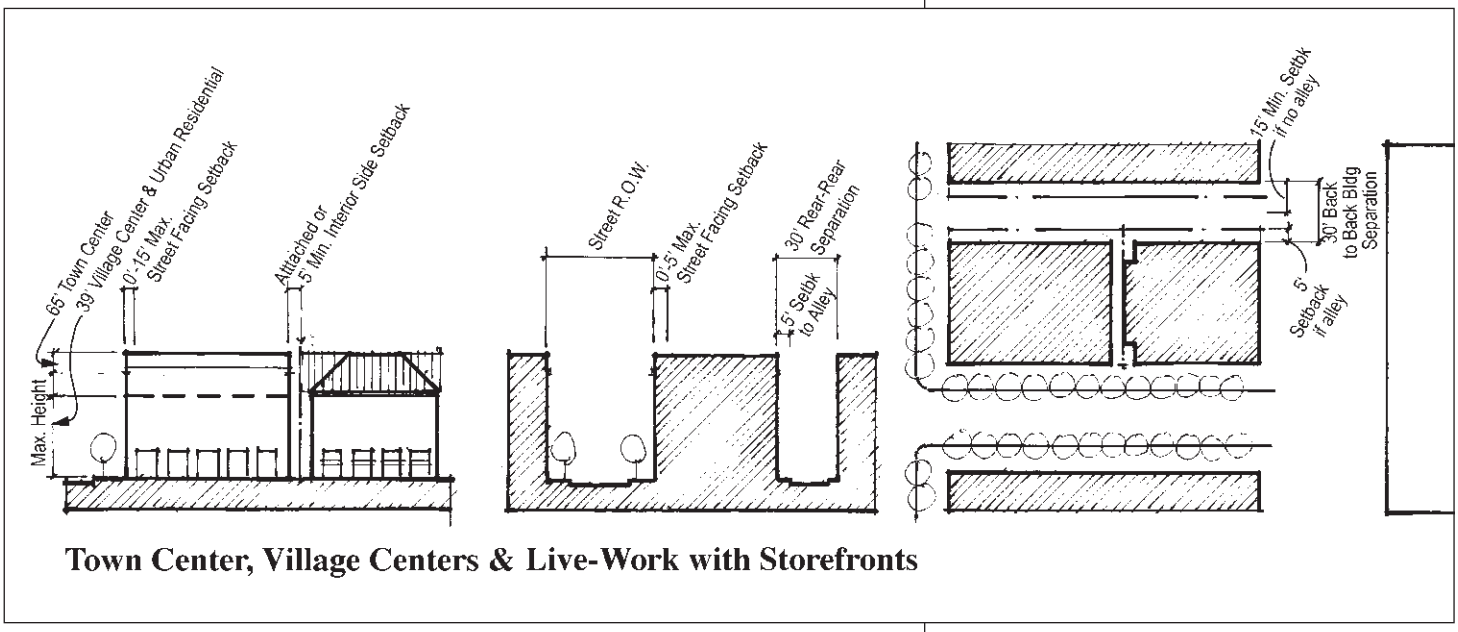
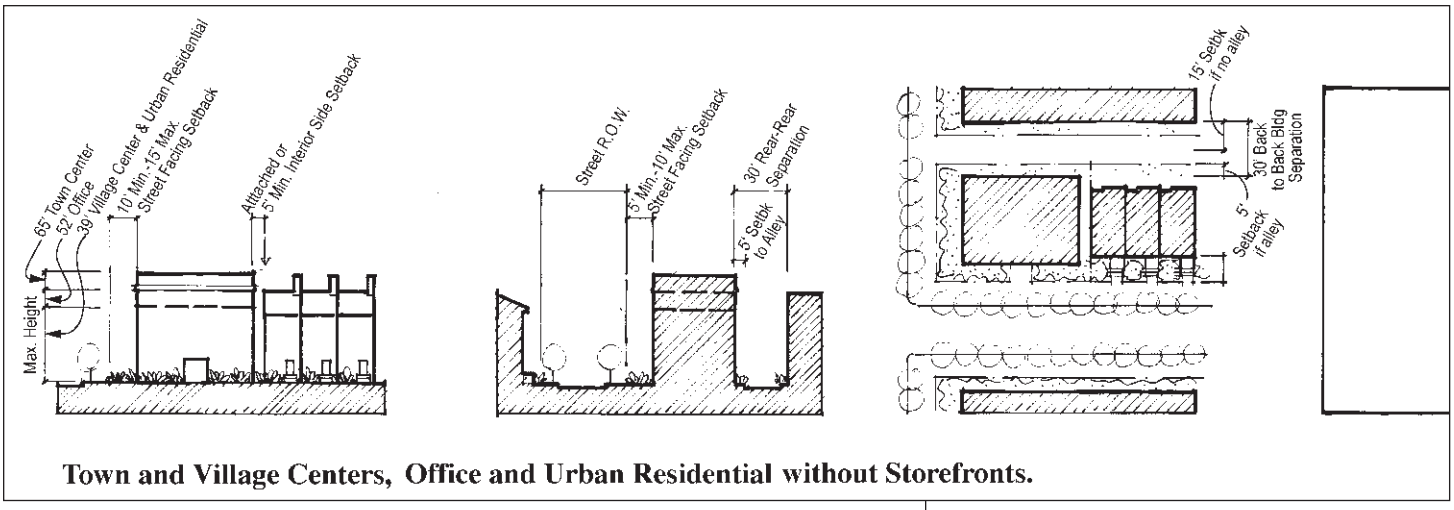


Diagram 15



Town and Village Centers, Office and Urban Residential without Storefronts.

Diagram 16

Street Frontage Length. All streets should be lined by buildings with windows and entries, not parking lots nor garage doors. In Town Center, Village Center, and Office areas, building facades should occupy at least 75% of the available street frontage on each side of a block (i.e. each block face). In Urban Residential areas, building facades should occupy at least 50% of the available street frontage on each block face.

To be counted toward this requirement, buildings must be within the maximum allowable street-facing setback (Diagram 18) and meet Entry & Transparency requirements (see below). Qualifying buildings may not be separated from the street by on-site parking or drive lanes. Landscaped plazas and/or passages may be used in lieu of buildings for up to 10% of the available frontage. The required frontage may be reduced to provide a single 20-foot driveway, where site access cannot be provided otherwise. Blocks must conform with "Block Size" requirements (see Transportation Element). Construction may be phased along a block face, but a developer guarantee should be required to enforce this provision.

Mixed-Use Commercial Street Frontage Length

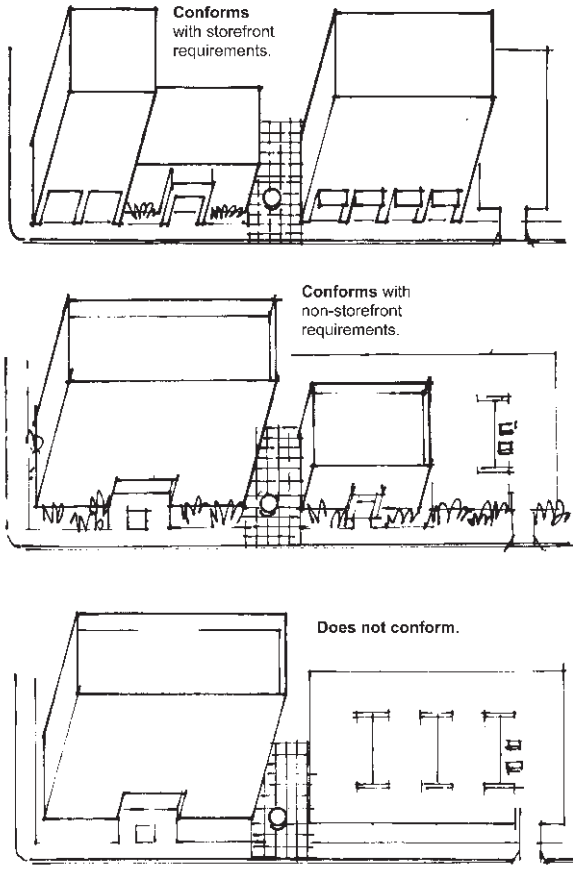


Diagram 17

Transparency

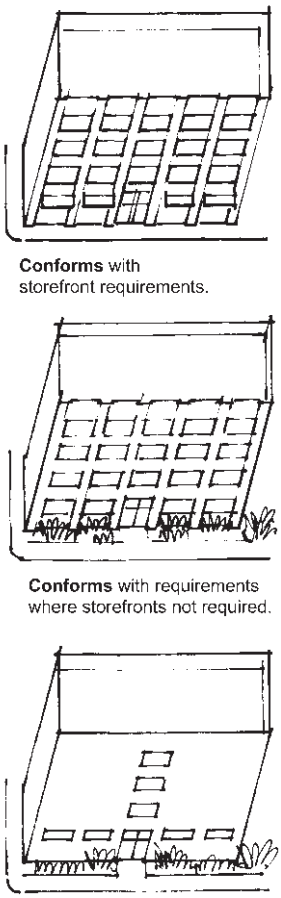


Diagram 18

Building Entry. (Diagrams 19 and 20) Primary entries for new buildings shall connect to a street via a sidewalk, connecting directly and visibly from the street where possible, otherwise connecting via landscaped courtyard(s) or plaza(s). To be clearly expressed and provide shelter from sun and rain, residential building entries shall have the following features with the floor area stipulated below.

Apartment buildings— a covered porch or interior vestibule with 60 sf floor area and at least 6 feet clear in any direction; interior vestibule entry doors shall be accompanied by an overhang and clear glazing within the door or immediately to the side of the door;

Single-family detached houses—a covered porch with 100 sf floor area and at least 6 feet clear in depth and 12 feet clear in width.

Townhouses (also known as "attached single-family"— a covered porch, veranda or stoop with 40 sf floor area and at least 6 feet clear in any direction.

Building Transparency. At least 25% of the area of street-facing elevations shall be comprised of windows and/or entrances. To qualify as a Storefront, at least 50% of the ground-floor elevation shall be comprised of windows and/or entrances. Transparency is measured by taking the total area of all windows and entrances, and dividing it by the total area of the street-facing building elevation. Glass block, mirrored glass, frosted glass, clerestory windows (sill heights over 5' from floor-level), and other obscured openings may not be used to meet this requirement. (Additional requirements for windows are contained in Architectural Standards.)

Garages. Garage access shall be off alleys or via a side drive where one of the garage sides abuts the rear edge of the Building Envelope or the back yard setback, except where lots are 30,000 sq ft or greater and will not be subdivided.

On streets where high traffic volumes are anticipated (greater than 6000 Average Trips Per Day) and where driveway curb cuts may be unsafe, street-facing garages are not allowed except where lot access cannot be otherwise provided.

Where garages are permitted they shall not comprise more than 40% of any single family street facing façade nor comprise more than 30% of any multi-family façade (See Diagram 21 Garages and Residential Street Frontages). Permitted street facing garages shall be set back at least 25 feet from the street or 10 ft. behind the front façade, whichever is greater**.**

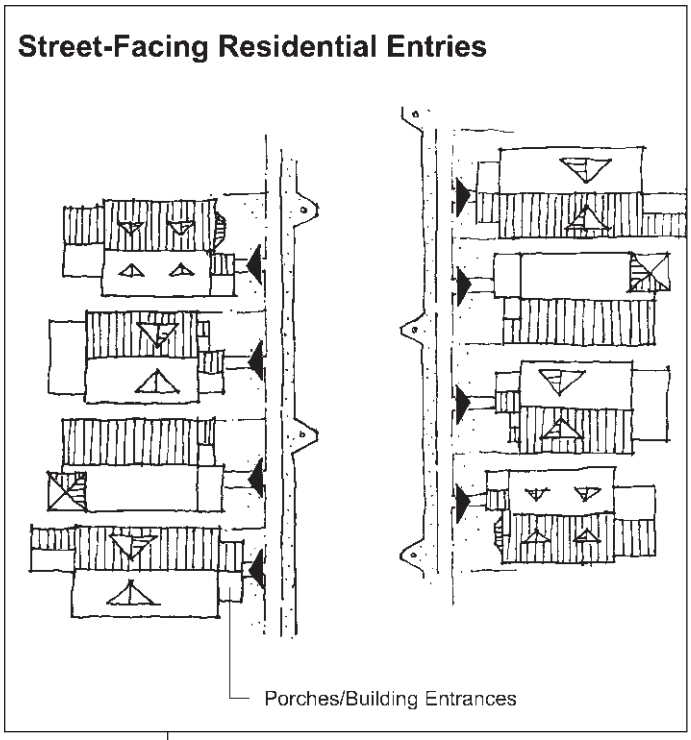


Diagram 19

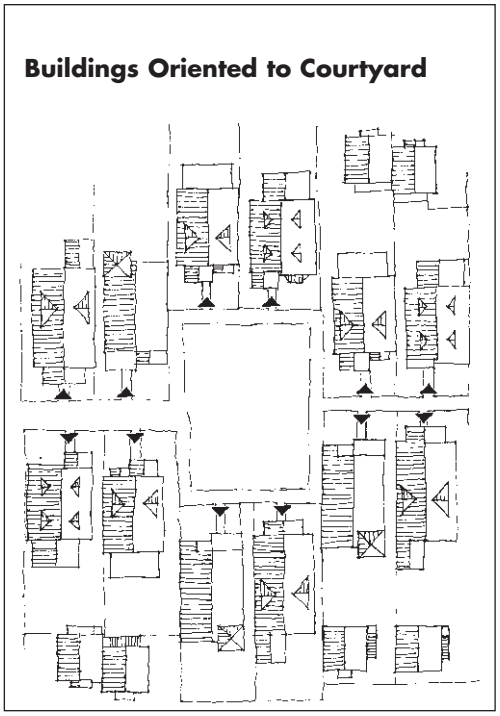
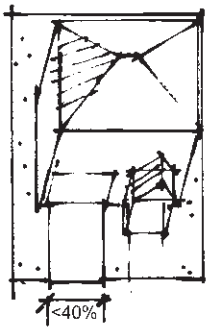


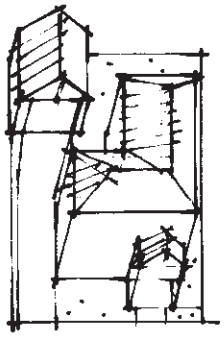
Diagram 20

Garages and Residential Street Frontage

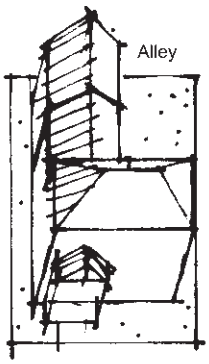
Single-Family



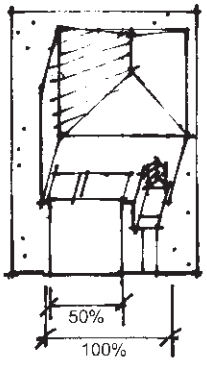
Conforms.
Garage less than 40% of front facade.



Conforms.
Garage accessed via side drive.

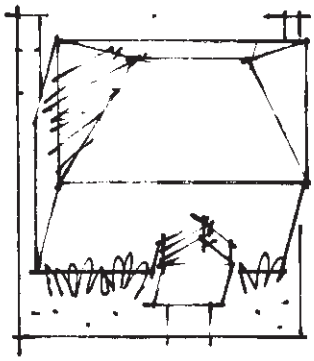


Conforms.
Garage accessed via alley.

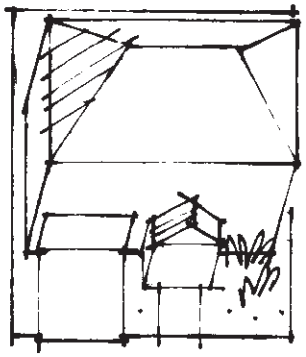


Does not conform.
Garage over 50% of front facade.

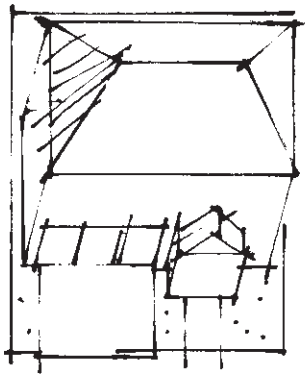
Multi-Family



Conforms.
Alley accessed garage.



Conforms.
Garage less than 30% of front facade.



Does not conform.
Garage over 30% of front facade.

Diagram 21

5. Parking Standards

Projecting Demand. For individual uses, peak demand for individual uses should be calculated by using the Peak Demand for Individual Uses (below) and by applying reduction factors for mixed-use development and proximity to transit.

Table 12: Parking Standards

Amusement enterprises	1 space per 4 occupants
Banquet halls	1 space per 4 seats
Bars, pubs, and cocktail lounges	1 space per 4 seats
Cultural facilities	1 space per 3 seats
Churches and other places of worship	1 space per 4 seats
Cinemas, theatres, & auditoriums	1 space per 3 seats
Community & Recreation Facilities	1 space per employee plus 1 space per 1,000 square feet, plus curbside drop-off
Financial, insurance, & real estate services	3 spaces per 1,000 square feet (net leasable area)
Food stores	3 spaces per 1,000 square feet (net leasable area)
General merchandise retail	3 spaces per 1,000 square feet (net leasable area)
Health clubs	3 spaces per 1,000 square feet (net leasable area)
Lodging	1 per room
Parks, Plazas & Passive Open Space	On-Street within 1 block, unless demand is demonstrated to be higher.
Personal services	3 spaces per 1,000 square feet (net leasable area)
Professional services	3 spaces per 1,000 square feet (net leasable area)
Residential and Live-Work	1 space per 1 bedroom & studio 1.5 spaces per 2 bedrooms 2 spaces per 3+ bedrooms
Residential Accessory Units	1 space per unit
Restaurants	1 space per 4 seats
Retail trades	3 spaces per 1,000 square feet net leasable area

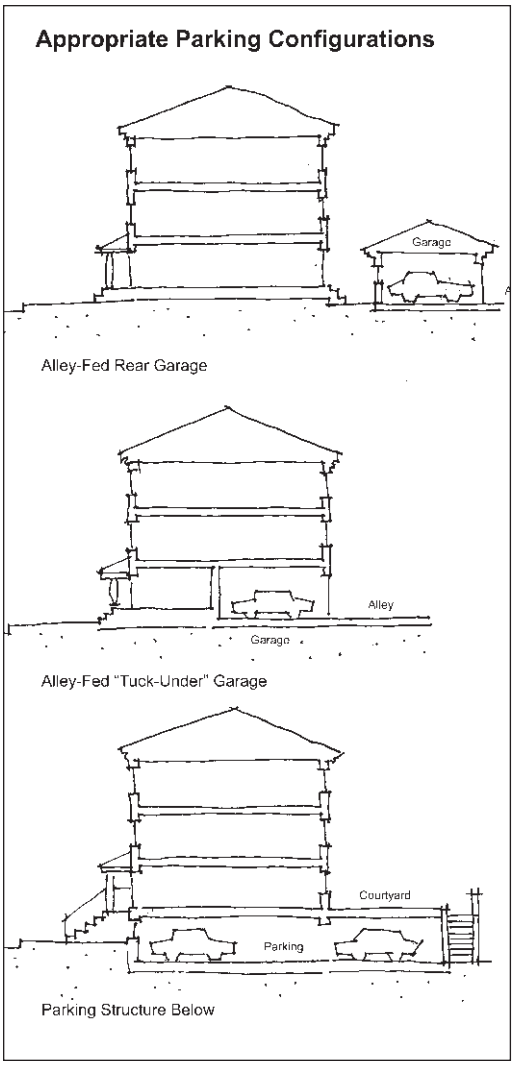


Diagram 22

Residential entries dominated by garage doors not permitted.

Parking reductions may be taken for the following.

- Uses in mixed-use Village Center or Town Center, or within 650 feet of a Village Center or Town Center, may factor a 20% reduction in parking requirements.
- Uses from 650 feet to 1300 feet of a Village Center or Town Center may factor a 10% reduction in parking.
- Uses within 650 feet of Bus Rapid Transit stops may factor a 20% reduction in parking requirements.
- Uses from 650 feet to 1300 feet of Bus Rapid Transit stops, or within 650 feet of other bus stops, may factor a 10% reduction in parking requirement.
- Reduction factors may be added together where uses are near both a mixed-use center and transit but the total will not exceed 30% reduction.

Calculating Supply. Parking requirements shall be met by considering the sum of all on-site parking (at surface and in structures), *plus* on-street parking contained within or immediately adjacent to the project, plus contributions made by off-site parking facilities within 900' (including joint use facilities).

Parking Dimensions – On-Site. Parking spaces shall be assumed to have a length of 18 feet; this may be reduced to 16 feet where cars can overhang wheel stops or curbs. Standard parking spaces shall have a width of 9 feet, and compact parking spaces shall have a width of 8.5 feet. Within every parking lot or garage, up to 25% of all spaces shall be compact and shall be dispersed throughout any lot.

Parking Dimensions – On-Street. On-street parking spaces shall have a length of 20 feet and a width of 7 feet.

Landscaping. Surface parking shall have one tree planted adjacent to every six parking spaces. Diamond-shaped tree wells (approximately 5'x5') are an efficient means to meet this requirement, as they take advantage of car overhangs. Surface parking lots may not exceed a dimension of 260 feet in any direction without providing a landscaped pedestrian walkway.

Parking Location & Design. Street Frontage requirements (see "Building-Street Relationships" above) necessitate that parking lots be placed to the rear or side of buildings. Where parking lots abut streets, a 5-foot landscaped setback shall be provided, which shall contain a 3-foot hedge or screen wall.

Parking Structures. Street Frontage requirements apply. Parking structures shall contain ground-floor storefronts or residences along 80% of any street-facing frontage.

Neighborhood Permit Parking. Neighborhoods adjoining a Town Center, Village Center, Neighborhood Mixed Use Area, Office Campus, or high school site may initiate a petition and establish a Neighborhood Permit Parking system without regard to the percentage of on-street parking spaces used by persons who are not residents of the neighborhood.

6. Conservation Development and Development Envelopes

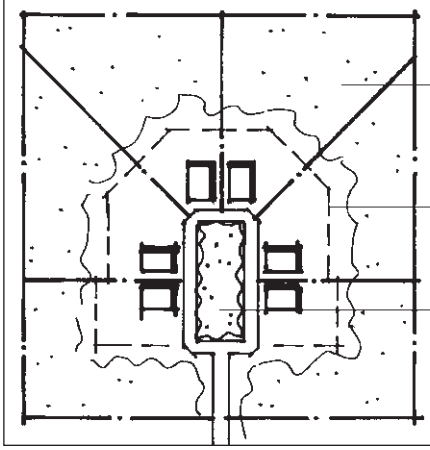
Intent and Definitions

In the absence of clustering, development may happen but with rural lots. With clustering, smaller lots are possible, but large contiguous open space areas must be set aside. These open space areas will help maintain the scenic quality of these areas by maintaining long views and by conserving unique features like small arroyos and rock outcroppings. Publicly accessible trails are also possible in open spaces held publicly or by homeowners' associations. Additional open space that is not publicly accessible will be maintained on private lots through the use of conservation easements that prohibit construction and activities that might damage the environment.

Community Conservation Areas. Community Conservation Areas place ecologically and culturally sensitive areas within a large and contiguous parcel. Community Conservation Areas may be dedicated into perpetuity to a land trust, or owned by a property owners association (or similar community ownership). Community Conservation Areas are for the shared enjoyment of abutting owners and the public, and are adjacent to multiple properties. Publicly-accessible trails are required. Aside from publicly-accessible trails, deed restriction prohibit any development or construction activities.

Conservation Easements. Conservation Easements are permanent deed restrictions that limit construction and ecologically-harmful activities on a portion of a property that is owned by an individual. Except for restrictions on construction and certain activities, areas held in Conservation Easements remain available for private use and enjoyment. Conservation Easements provide a buffer to ecologically-sensitive areas preserved within Community Conservation Areas. Conservation Easements also increase the potential for long views that are uninterrupted by development. While Community Conservation Areas must provide publicly-accessible trails, Conservation Easements will rarely contain provisions for public access. (The donation of a conservation easement may be considered to be a tax-deductible gift, provided that the easement is perpetual and donated exclusively for conservation purposes to a qualified conservation easement or public agency.)

Conservation Easements and Development Envelopes



Conservation Easement
Activities restricted. Natural open space.

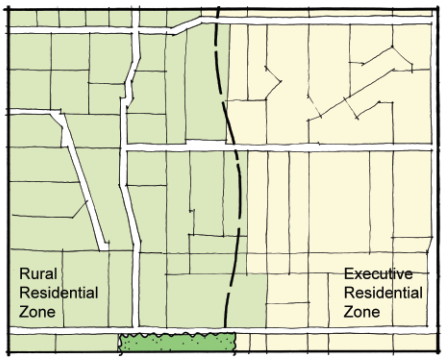
Development Envelope
Construction and active yards permitted.

Common Open Space
Suggested.

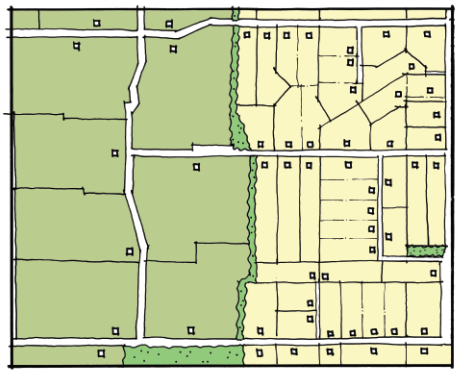
Diagram 23

Conservation Development Lot Patterns

Existing Lot Pattern



Development Pattern Permitted without Conservation Development



Development Pattern with Conservation Development

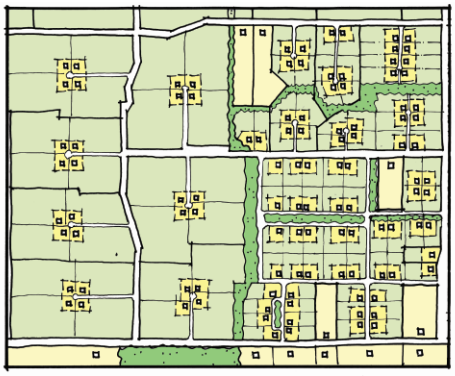


Diagram 24

Conservation Development Nomenclature

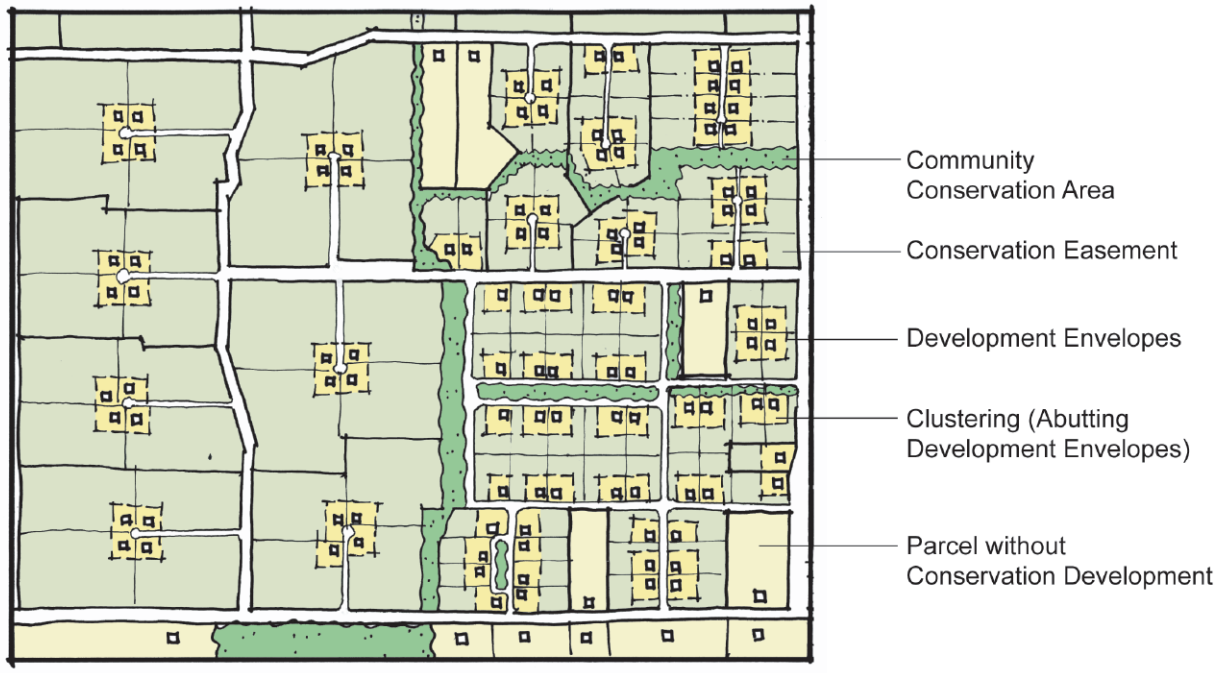


Diagram 25

Development Envelope. That portion of an individual's property that is not within a Conservation Easement is called the Development Envelope. Limits on construction are similar to those that apply to other developable areas. Landscaping within the Development Envelope is allowed using Plant List B (*see Landscape Design Standards*). Walls and fences as provided in these regulations also are allowed for the purpose of enclosing private areas, mitigating noise, and providing security.

Clustering. Clustering is the practice of bringing together two or more Development Envelopes. Clustering provides a larger, more contiguous ecological buffer area, uninterrupted by structures or environmentally damaging activities. Clustering also reduces the visual profile of development and provides longer, uninterrupted views. Combined with Community Conservation Areas and Conservation Easements, Clustering is an important ingredient for maintaining the rural character of an area.

Benefits and Requirements

Density Bonus Requirements. A Density Bonus shall be granted for projects, in proportion to the amount of Community Conservation Area created (as described by tables at the end of this section). Requirements for Community Conservation Areas are noted below. To qualify for a Density Bonus, a project must also conform to provisions for Conservation Easements & Development Envelopes, and Conservation Design Features.

Community Conservation Areas. Community Conservation Areas shall conserve ecologically and culturally sensitive areas. Ecologically sensitive areas may include arroyos and rock outcroppings and other natural areas with more abundant vegetation and wildlife. Culturally sensitive areas may include archeological sites and areas where devel-

opment may be visually intrusive, as seen from public open spaces or frequently traveled roads.

Community Conservation Areas shall be dedicated to a land trust, or owned by a property owners association (or similar community ownership). Trails shall be created and shall be publicly-accessible. Except for the creation and maintenance of trails and trail facilities, permanent deed restrictions shall prohibit: grading and construction; running of pets off-leash; pasturing of livestock; gardening; the use of cars, motorcycles, or other motorized equipment; and clearing and planting of vegetation (except for habitat restoration using Plant List A, *see Landscape Design Standards*).

Naturalized stormwater features may be constructed in Community Conservation Areas, but must be based on a plan endorsed by both a qualified biologist and qualified hydrologist. Signs shall accompany trails, which describe the ecology of each Community Conservation Area, and explain why off-trail hiking and bicycling is prohibited. Post and wire and/or split rail fences are allowed within Community Conservation Areas to separate private from publicly accessible land. Fences between Community Conservation Areas and private lots shall be designed to permit the movement of wildlife at their base.

Provisions that provide for the on-going maintenance of trails — and the monitoring and enforcement of restricted activity — shall be established for Community Conservation Areas.

Conservation Easements & Development Envelopes. To qualify for a Density Bonus, permanent Conservation Easements shall be established on private lots for areas outside of designated Development Envelopes. Development Envelopes shall not exceed 15,000 square feet.

In Conservation Easement areas, permanent deed restrictions shall prohibit: running of pets off-leash; walls and fences; pasturing of livestock; gardening; the use of cars, motorcycles, or other motorized equipment; grading and construction (except to provide a trail between Development Envelope and Community Conservation Area); and clearing and planting of vegetation (except for habitat restoration using Plant List A, *see Landscape Design Standards*). Naturalized stormwater features may be constructed, but must be based on a plan endorsed by both a qualified biologist and qualified hydrologist.

To "cluster" development, Development Envelopes shall abut a street or abut a neighboring Development Envelope. Clustering of two or more Development Envelopes is encouraged.

Conservation Design Features

Drainage. Impermeable surfaces shall not cover more than 33% of Development Envelope areas. Stormwater shall not be concentrated, except through the use of naturalized swales. Stormwater features that occur outside of Development Envelopes, driveways, or street rights-of-way must be based on a plan endorsed by both a qualified biologist and qualified hydrologist.

Rural Streets. Only local streets with no parking (24' paved width) or one-side parking (28' paved width) shall be used in Executive Residential and Rural Residential areas. Gravel shoulders may be provided. Curbs shall not be used, except where needed to address site-specific erosion issues.

Trails. Trails shown in the Open Space Mult-Use Trail Network Map shall be provided. Projects shall provide additional trails for the enjoyment of area residents and the public. The trail network should connect to streets with signed trailheads.

Density Bonus Provisions. Smaller lots sizes shall be granted for establishing Community Conservation Areas, consistent with the following tables. To qualify for the smallest permissible lot sizes, thirty percent of a project's area shall be established as Community Conservation Area(s). No Community Conservation Area is required for the minimum lot sizes allowed without Clustering (see Land Use Element and notes below the following tables.) Lot sizes between these two extremes are possible, with adjustments to required Community Conservation Area(s) made proportionally (see tables for examples).

Development Envelopes

Development Envelopes are required for Suburban Residential, Executive Residential, and Rural Residential Areas regardless of whether a Density Bonus is applied.

Development Envelopes define an area in which buildings (including accessory structures), landscaping (restricted to the plants contained in Plant List B), construction activity, walls and fences, and recreational activities are permitted. Impermeable surfaces shall not cover more than 33% of Development Envelope areas. Stormwater shall not be concentrated, except through the use of naturalized swales.

The sizes of Development Envelopes are restricted as follows.

- Development Envelopes in Rural Residential areas shall not exceed 15,000 square feet.
- Development Envelopes in Executive Residential areas shall not exceed 10,000 square feet.
- Suburban Residential. There are two standards for the Suburban Residential Area. Development Envelopes are the areas in which construction activity may occur and Plant List A must be used. (See *Landscape Design Standards*). Development Envelopes shall not exceed 5,000 sf or 50% of the lot size, whichever is greater. Backyards are contained within Development Envelopes and are areas where recreational activities and Plant List B may be used. (see *Landscape Design Standards*) Backyards shall not exceed 2,000 sf and only shall be located behind the residence.

Table 13

Rural Residential **Lot Size**	% of Total Area Devoted to Community Conservation Area	Estimated 20-Acre Yield (inclusive of streets and Community Conservation Areas)
8 acres (358,000 sf) permitted without Conservation Bonus	0% (minimum)	2 du
2 acres (87,000 sf) minimum lot size allowed with Conservation Bonus	30% (maximum)	7 du
4 acres (174,000 sf) interpolated using 8 acre and 2 acre provisions above	20%	4 du
6 acres (261,000 sf) interpolated using 8 acre and 2 acre provisions above	10%	3 du

Executive Residential **Lot Size**	% of Total Area Devoted to Community Conservation Area	Estimated 20-Acre Yield (inclusive of streets and Community Conservation Areas)
60,000 sf permitted without Conservation Bonus	0% (minimum)	13 du
30,000 sf minimum lot size allowed with Conservation Bonus	30% (maximum)	21 du
40,000 sf interpolated using 60,000 sf & 30,000 sf provisions above	20%	17 du
50,000 sf interpolated using 60,000 sf & 30,000 sf provisions above	10%	15 du

Outside of Development Envelopes within Suburban Residential Areas, permanent deed restrictions shall prohibit: grading and construction; wall and fences, running of pets off-leash; pasturing of livestock; gardening; the use of cars, motorcycles, or other motorized equipment; and clearing and planting of vegetation (except for habitat restoration using Plant List A, *see Landscape Design Standards*). Naturalized stormwater features may be constructed in Community Conservation Areas, but must be based on a plan endorsed by both a qualified biologist and qualified hydrologist.

Suburban Residential **Lot Size**	% of Total Area Devoted to Community Conservation Area	Estimated 20-Acre Yield (inclusive of streets and Community Conservation Areas)
14,000 sf permitted without Conservation Bonus	0% (minimum)	54 du
5,000 sf minimum lot size allowed with Conservation Bonus	30% (maximum)	125 du
8,000 sf interpolated using 14,000 sf & 5,000 sf provisions above	20%	83 du
11,000 sf interpolated using 14,000 sf & 5,000 sf provisions above	10%	64 du

Note: In Suburban Residential areas, Land Use Element requires Maximum Average Density of 4 dwelling units per gross acre. To attain this maximum with the same lot size, developers would use 8,000 sf lots and would be required to set aside about 20% of the site as open space.

V
Architectural and Landscape Design

1. Intent

Quality. The quality of individual buildings contributes to the sense of place and permanence. These architectural and landscape standards apply to individual buildings, lighting, utilities, walls, and landscape design, with the intent of creating a high quality built environment with lasting character that draws on southwestern regional styles and traditions. Individual design expression and the diverse character of the land use districts can all flourish within an overall framework of quality.

Climate. Architectural elements should respond to unique southwestern climatic conditions. This means providing shade as relief from harsh sunlight and heat, and conserving water.

Suburban Residential Neighborhood

Views. In order to fully understand the rationale for the regulations related to the visual qualities of buildings and landscaping, it is necessary to understand the importance of the area culturally and to the rest of the city. Ruth Eisenberg in communication with members of Save the Volcanoes expressed the visual significance of the Escarpment in 1980: "When people say 'volcanoes' they do not mean the cones and nubbins alone…. They are referring to the desert sloping up gradually, the expanse ending in the row of cones which seem to accentuate our sky, especially at sunset." Many points throughout the city offer panoramic views of the full length of the volcanic flows.

An analysis of the views of Volcano Heights and from Volcano Heights provides the basis for regulations dealing with color, reflectivity, lighting, building materials, and landscape design. To minimize the visual impact of development, predominant colors used on structures will blend with the natural colors of the mesa.

2. View Shed Findings

The Volcano Heights Plan addresses preserving views and visual experiences especially related to the volcanic cones, the buffer edge of the Escarpment, Rio Grande, and Sandia Mountains. A background discussion related to these concerns is contained in *Conditions and Considerations, The Meaning of Place: Natural / Cultural Features.*

The objectives include preserving views:

- Of the Volcanic cones from within the Volcano Heights Plan Area and the rest of the city of Albuquerque to the east,
- Minimizing the visual impact of Volcano Heights development, especially along the Escarpment edge, to the city of Albuquerque,
- Protecting views from key cultural locations including from the Volcanic Cones and the Petroglyph cluster within the North Geologic Window to the Rio Grande and the Sandia Mountains; minimizing the visual impacts of Volcano Heights development from these locations.

The Volcano Heights Plan establishes building height restrictions consistent with these objectives. These objectives are also addressed through architectural standards such as building materials, reflectivity, and color. Others are achieved through providing facilities such view points on the Escarpment and calling for streets to be aligned to preserve views.

Analysis

A View Shed analysis was conducted to determine what could be seen from different locations within Volcano Heights and the city assuming that the area was completely developed at the maximum heights allowed. This was done by building a 3-D computer model of the land use plan and then moving the "observation point" to different locations. The light green shading indicates what can be seen from the observation point.

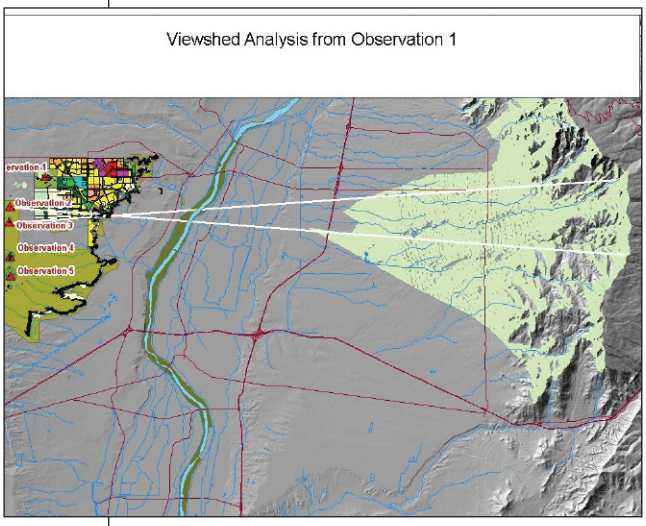
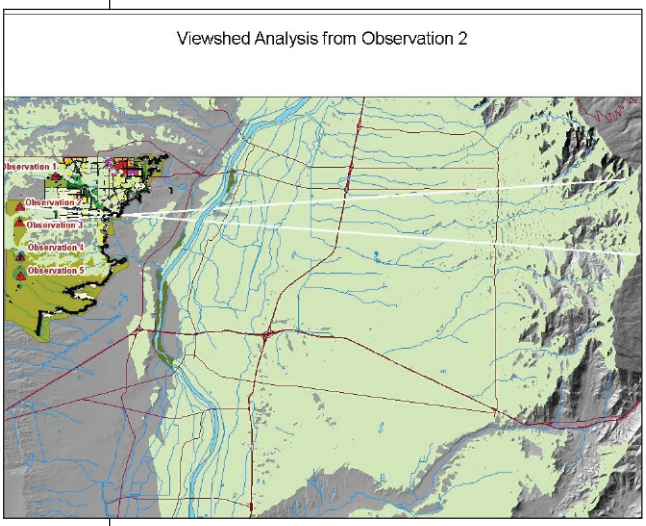


Exhibit 27
View shed Analysis from Observation Point 1

Views from Volcano Heights Looking East

The views from Volcano Heights to the east are shown in maps of Observation Points 1 and 2. (Exhibit 27) Observation 1 is from a point within the North Geologic Window containing a number of Petroglyphs. The Planning Team was told that active Pueblo cultural practices call for protecting this view. The map indicates it will be possible to see from the foothills to the crest of the Sandia Mountains from this location assuming development as in the land use plan. Apparently it will not be possible to see the Volcano Heights buildings from this location.

An analysis was conducted from each of the Volcanic Cones as separate observation points. Observation 2 from the northernmost volcano is typical of the results. From the northernmost Volcanic Cone one has an almost uninterrupted view to the east toward the Volcano Heights Plan Area, the Rio Grande, city of Albuquerque, and Sandia Mountains beyond.



View shed Analysis from Observation Point 2

Both the maps above indicate the part of the Sandias viewed within lines that start at the tops of the two northernmost volcanoes and move through the concentration of Petroglyphs on the Escarpment at the Boca Negra arroyo. As indicated in *Conditions and Considerations, The Meaning of Place: Natural/ Cultural Features,* an important path was from the former Pueblos along the Rio Grande along the Boca Negra arroyo to the North Geologic Window and these two volcanoes. Pueblos place importance on the straight line connections between landscape features. In this case, these lines frame the least steep and most accessible route from the Sandia foothills to the Crest. It is assumed that this path was used to access shrines and other resources on the face and crest of the Sandias.

Views from Albuquerque to Volcano Heights

Observation 6 (See Exhibit 28) is from an observation point at Paseo del Norte and Golf Course Rd. This map indicates that the only buildings observable from this location are in a small portion of the La Cuentista subdivision.

This situation changes materially when the observation points are moved further east and south. The views from the overpass at Interstate 25 and Paseo del Norte and from a point at the University of New Mexico (Observation 9) are nearly the same. One is able see development on the eastern portion of Volcano Heights – SAD 227, the eastern part of the proposed SAD 228 area, and the eastern parts of the Town Center and the Universe Village Center. Importantly, one is also able to see the lower density executive and rural residential areas to the west of the Universe Village Center to the Monument. The views appear to be unimpeded from these locations in the city to the open space in the Petroglyph National Monument.

Conclusion

The View Shed analysis found that:

- Important views from locations within Volcano Heights to the Albuquerque basin and the Sandia Mountains are protected; and
- Development within Volcano Heights will be visible from most of the city of Albuquerque; hence care needs to be taken in to achieve non-visually intrusive development especially in the lower density residential areas and in all of Volcano Heights.

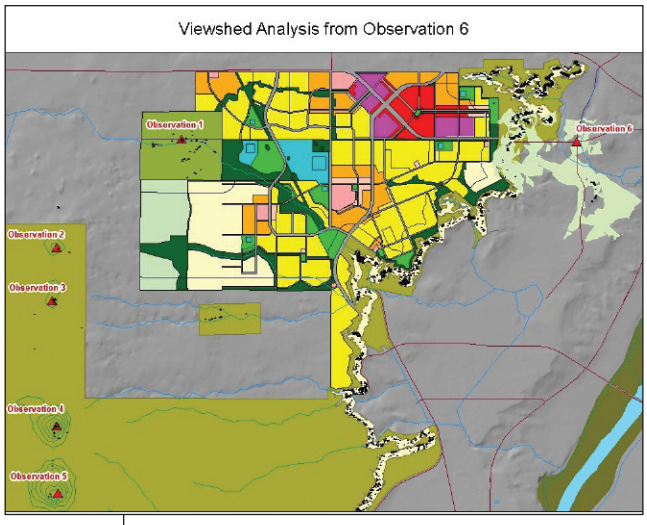
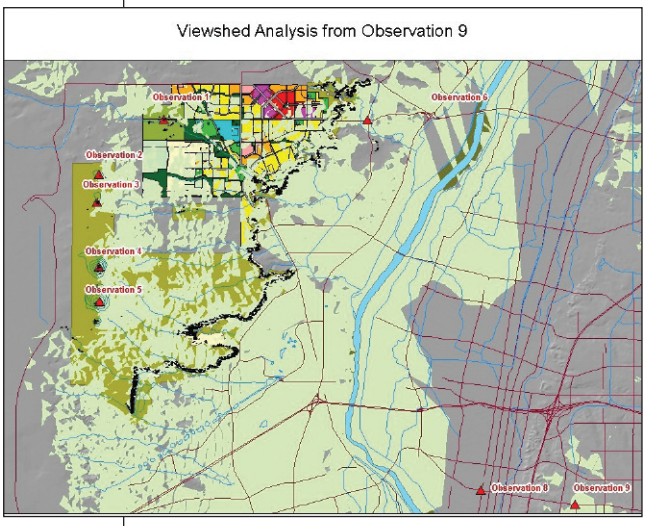


Exhibit 28
View shed Analysis from Observation Point 1



View shed Analysis from Observation Point 2

3. Architectural Design Standards

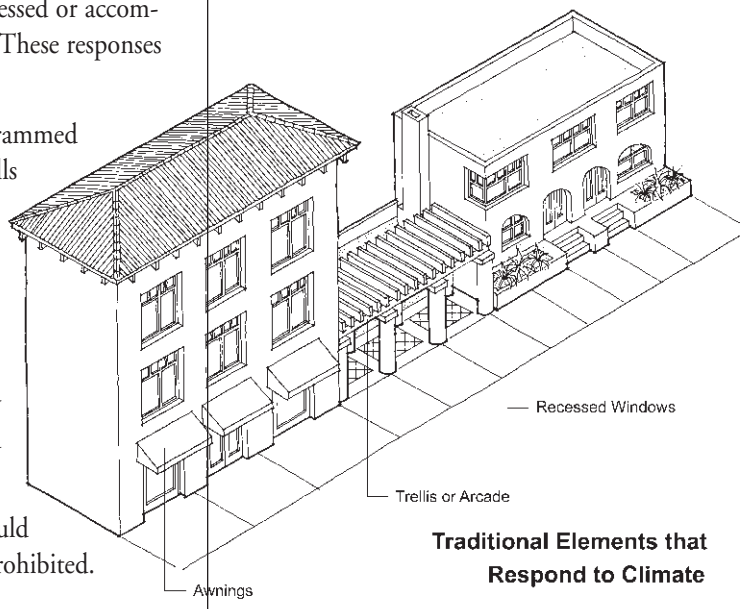
Architectural Design Standards should be applied to all uses.

Climatic Response. Building elements that shelter pedestrians such as verandas and arcades are encouraged. Windows and openings should be deeply recessed or accompanied by eaves, verandas, deep eaves, or metal awnings (not fabric). These responses to climate reduce solar gain with traditional southwestern features.

Building Walls. Walls should be stucco, brick and tile masonry, rammed earth, adobe, native stone (or synthetic equivalent), or straw bale. Walls may be clad or plastered with stucco, brick and tile masonry, cement tile (e.g. Hardy-board), or native stone (or synthetic equivalent). Wood and reflective panels should not be used as an exterior finish. Stucco and concrete should have integral color. For free-standing walls see *Walls & Fences* in *Landscape Design*.

Posts & Beams. Exterior posts and beams should consist of heavy timbers, concrete or steel. Beams made of composition or laminated wood should not be used.

Roofs. The slope of roofs should not exceed 3:12. Sloped roofs should be metal, or cement, ceramic, or clay tile. Reflective roofs are prohibited. Parapets should hide flat roofs. Mansard roofs are prohibited.



Traditional Elements that Respond to Climate

Windows. Windows shall be double-hung, single hung, awning, or casement types. Mullions should be "over glass." The horizontal dimension of any window opening shall not exceed the vertical dimension; posts with a width of at least 4 inches may be used to separate openings.

Glass on any surface shall not be reflective or mirror glass, that is, glass having greater than 15% average daylight exterior reflectance. Highly reflective or mirrored glass is prohibited. Glass for non-residential and mixed-use areas uses shall be clear with light transmission between exterior and interior rated at a minimum of 90% for the ground story and at least 75% for the upper stories (modifications permitted as necessary to meet any applicable building and energy code requirements).

Entrances, Porches, Stoops & Vestibules. See *Building-Street Relationships* described earlier in the Urban Design Element.

Detailing. Proper detailing that is revealed is preferred over poor detailing obscured by facia boards. Reveal well-executed connections where practical. Veneer materials should extend around exterior corners at least one foot. To avoid cracking and provide human scale, stucco should be accompanied by correctly-spaced and grommeted joints. Flashing should match roof or building color.

Color. Building walls and roofs in lower density residential areas should not use bright colors (accept as accents). Buildings throughout should not use highly reflective surfaces. Colors used on building walls and roofs within all lower density residential areas (Suburban Residential, Rural Residential and Rural Estates), should be use earth tones and reflectivity standards consisting of "Approved Colors" specified in Appendix E of the *Northwest Mesa Escarpment Plan (NWMEP)*. Mechanical devices, roof vents and screening materials are also subject to this regulation, as are fences and walls. Trim

materials constituting less than 10% of the façade's opaque surface may be any complementary color.

Within Town, Village centers, Neighborhood Mixed-Use, Office Campus, and Urban Residential Districts, colors outside the Approved Colors list may be used.

Service Areas. Service areas should not be visible from streets or public open spaces. They should be located away from streets or recessed within the building envelope. Service areas recessed within the building envelope, and facing streets or public open spaces, should not comprise more than 20% of a building's linear frontage; and should be accompanied by roll-up doors. Free-standing equipment and refuse containers should be screened from view of streets and public open space.

Commercial Signage. Signs should complement adjacent architecture. Appropriate signage includes blade signs, awning signs, and wall-mounted or hanging metal panel signs. Internally illuminated box signs, billboards, roof-mounted, free-standing, any kind of animation, and painted window signs, and signs painted on the exterior walls of buildings are not allowed. No flashing, traveling, animated, or intermittent lighting shall be on the exterior of any building.

Wall signs are permitted within the area between the second story floor line and the first floor ceiling within a horizontal band not to exceed 2' in height. Letters shall not exceed 18" in height or width and 3' in relief. Company logos or names may be placed within this horizontal band or placed or painted within ground floor or second story office windows and shall not be larger than a rectangle of 8 sq. ft. Projecting signs may not be more than 24" by 48" and a minimum 10' clear height above the sidewalk and may be hung below the third story level. Signs may not project more than 36" perpendicular to the right of way beyond the façade.

Awnings shall be cloth or equivalent, metal, or glass. "Quarter-cylinder" awning configurations are not permitted. Lettering on awnings is limited to 9" in height.

Equipment & Antennas. Mechanical equipment and antennas should not be visible from a street or public open space. Equipment may be recessed within the profile of the building, or it may be screened architecturally, such as though the use of false dormers, parapets or cupolas. Roof-mounted heating and air conditioning equipment shall be fully screened from views, both from the ground and from the escarpment. Screening materials shall be of Approved Colors in Appendix E of the NWMEP.

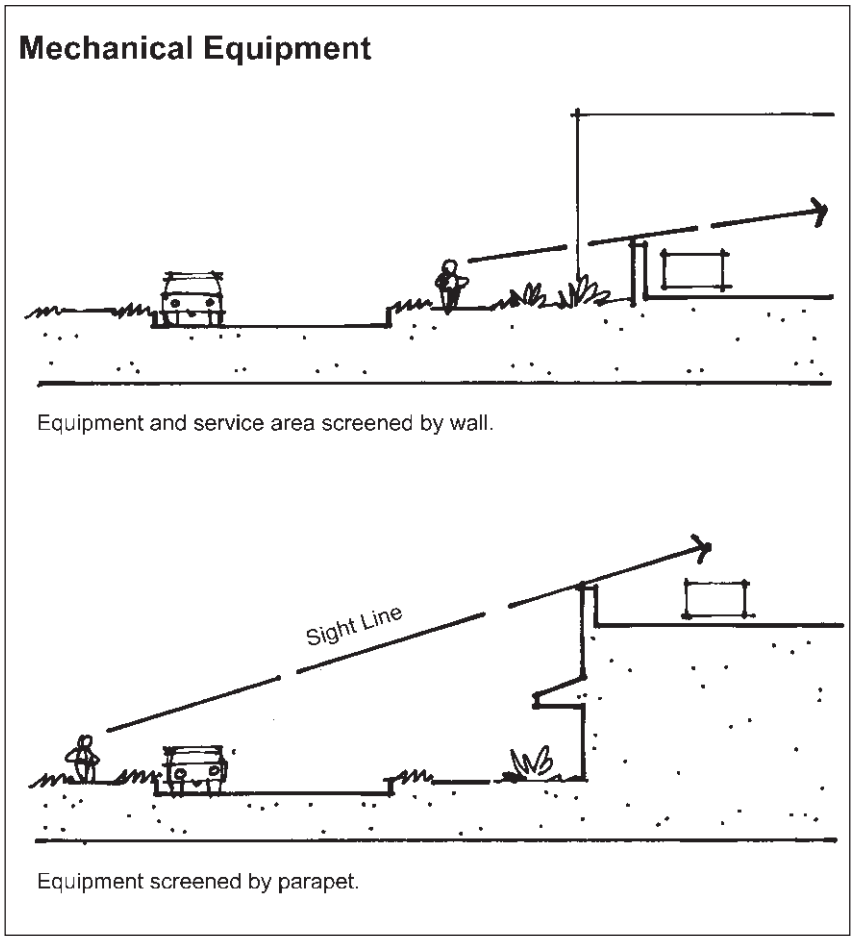


Diagram 27

Energy-Efficient Buildings. Buildings that are energy efficient are encouraged. Desirable features include:

- interior daylighting and fluorescent lighting;
- shaded windows and heat-exchange units;
- super-insulated low-emissive windows;
- natural cross-ventilation;
- passive solar heating and hot water;
- highly efficient appliances, heating and cooling systems; and
- the generation of electricity through wind generation and photovoltaics.

Arroyos, Petroglyph National Monument Buffer, and Other Public Open Space Corridors. See "Scenic Routes in the Open Space element" below.

4. Landscape Design Standards

Walls & Fences – Height & Placement. Walls and fences are allowed only in the Development Envelopes (Backyard portion) of houses in Suburban Residential and in the Development Envelopes of Executive Residential and Rural Residential, within properties facing the Petroglyph National Monument (the "Monument"), along arroyos with prudent line rights of way, and along the Scenic Corridors (see Open Space).

In the Town Center, Village Centers, Neighborhood Mixed Use, and Urban Residential areas, walls shall be constructed within 3 feet of street-facing property lines, where buildings are not within 10 feet of the property line. Walls and fences should not exceed a height of 48 inches where allowed within street-facing setbacks (except for columns that support arcades or trellises). Fences and walls should not exceed a height of 72 inches along rear and interior side property lines, where they are outside of required street-facing setbacks.

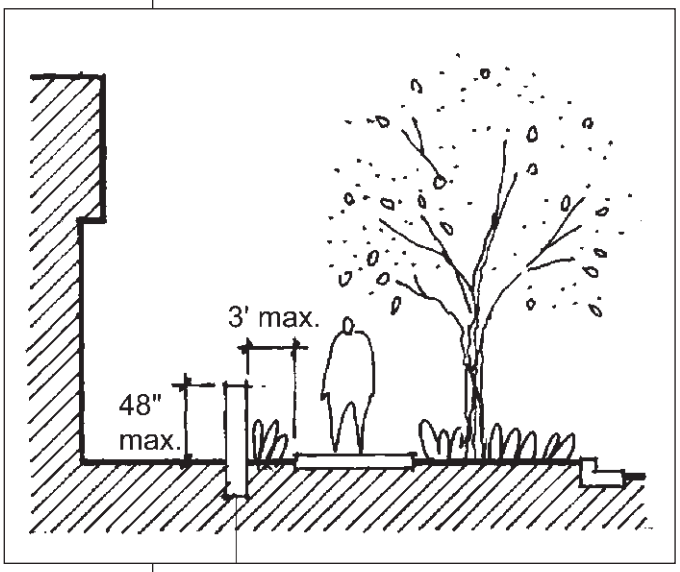


Diagram 28

Walls & Fences – Materials & Design. Walls should be stucco, brick and tile masonry, rammed earth, adobe, native stone (or synthetic equivalent) or straw bale. Walls may be clad or plastered with stucco, brick and tile masonry, or native stone (or synthetic equivalent). Stucco and concrete should have integral color (see *Color* above). The end of walls should have a pier or pilaster that is at least 12 inches in width, to give a substantial appearance. Fencing should be post & wire, split-rail, or coyote fencing. Wood board, cyclone, chain-link, and razor-wire fencing are prohibited.

Yards & Courtyards. An irrigated zone of up to 600 square feet per unit is allowed per unit within the Town Center, Village Center, Neighborhood Mixed-Use, and Urban Residential Zones. Xeric plants are permitted as specified in Plant List B below.

Please refer to the *Conservation Development & Development Envelopes* section for the landscape standards in the following Zones: Suburban Residential, Executive Residential, and Rural Residential.

Pedestrian Walkways. Arcades, trellises awnings, and/or trees are encouraged along pedestrian paths for shade and spatial definition. In parking lots, Pedestrian Walkways should not extend more than 75 feet without one of these features.

On-Lot Trees. Where buildings are placed more than 10 feet from a street-side property line, at least one tree should be planted per property within the street-side setback. Properties with a long street frontage should have one tree every 50 feet or less.

Lighting. Lighting should have a cut-off angle that directs light downward and only toward the property on which the light source is located. Light fixtures should be of a type that throws light downward and have baffles, hoods or diffusers so that no light point source should be visible from a distance greater than 1000 feet. On-site light poles should not exceed a height of 16 feet. High-intensity discharge lamps and sodium lamps should not be used. For properties adjacent to Arroyos, Petroglyph National Monument Buffer, and Other Public Open Space Corridors, see *Scenic Corridors* below. For street lighting, see *Transportation.*

Overhead Utilities. Construction of new overhead utilities is prohibited. The City should work with the electric utility company to explore ways to re-route or place major overhead utility transmission lines underground, especially along Universe at the Village Center locations.

Gateway Monuments. Pillars or walls may be built at entry points to neighborhoods and projects. Walls should not be more than 12 feet long and conform with *Wall & Fence* guidelines above. Pillars should not be more than 3 feet in width and 10 feet in height. Pillars and walls should be stucco, brick and tile masonry, rammed earth, adobe, native stone (or synthetic equivalent) or straw bale. Walls may be clad or plastered with stucco, brick and tile masonry, or native stone (or synthetic equivalent). Stucco and concrete should have integral color (see *Color* above).

Archeological Sites. Development, trails, and recreation areas should be set back at least 50 ft. from prehistoric Petroglyphs or other sites with high archeological value, unless designed under the guidance of a qualified archeologist. Archeological sites may be fenced off using acceptable fencing (see above) not exceeding 5 feet in height. Interpretive signage and exhibits are encouraged where major trails are near prominent archeological features, but should not exceed 3 feet in height.

View Corridors. Views should extend from archeological sites of major cultural importance toward the Sandia Mountains to the east, the two northernmost volcanoes to the west, and the Rio Grande and should be considered in site and master planning. (See View Shed Analysis)

Grading. Cut and fill slopes should be no steeper than 3:1 on average; and retaining walls should not exceed 4 feet in height unless incorporated within a building's foundation. Graded areas should maintain the character of the natural terrain by varying gradients, undulating contours, and rounding the toe and crest of any slope greater than 10 feet in height. Fill should be limited to a height of 4 feet.

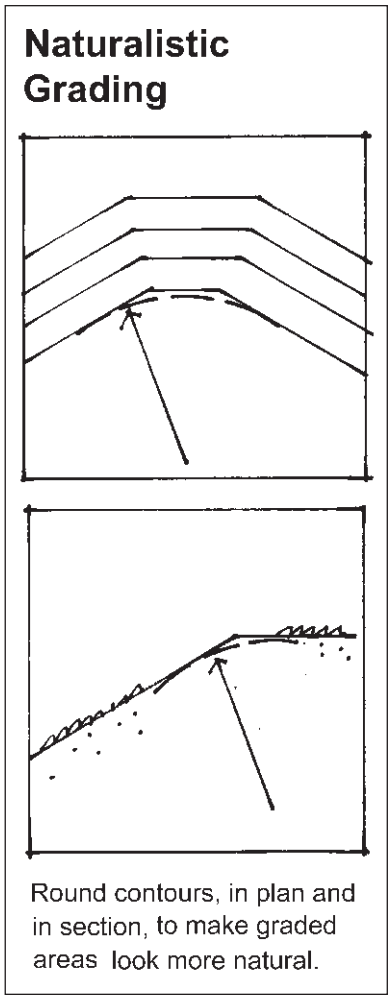
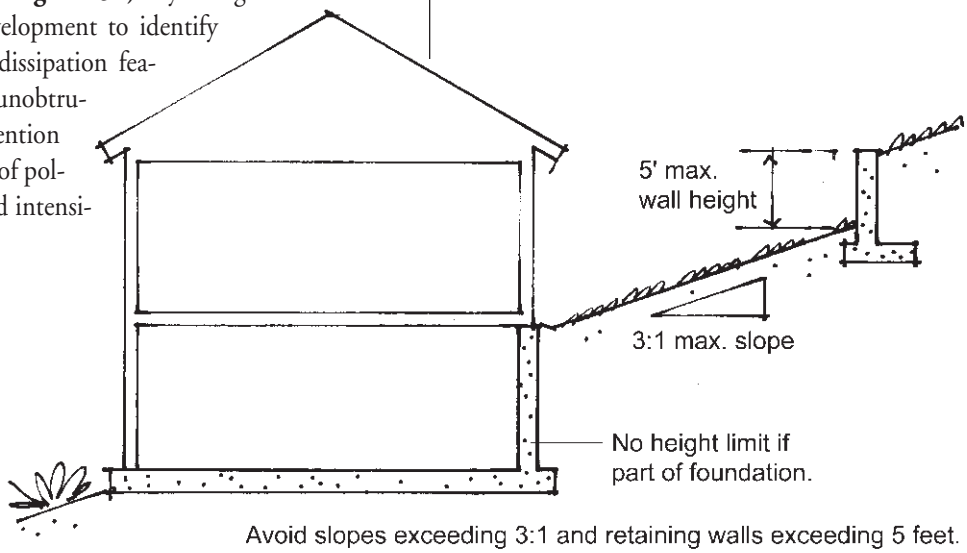


Diagram 29

Stormwater Quality and Management. (see diagram 31) Hydrological study and design may be required of new development to identify appropriate stormwater detention and energy dissipation features. Development projects shall incorporate unobtrusive stormwater features that facilitate the detention and infiltration of stormwater, and the filtration of pollutants from urban run-off. At all densities and intensities, appropriate techniques include:

- permeable pavers & concrete,
- infiltration beds place below paved areas,
- stone-filled reservoirs and dry-wells, and
- small "rain gardens" (low-lying with moisture-tolerant grasses, wildflowers, shrubs, and trees); and
- vegetated swales (in courtyards and street medians and planting strips).



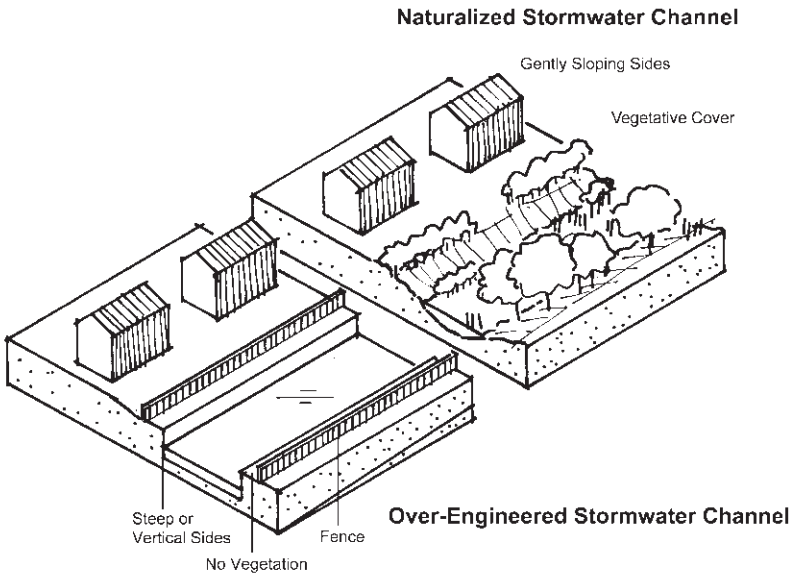
Alternatives to Mass Grading

Diagram 30

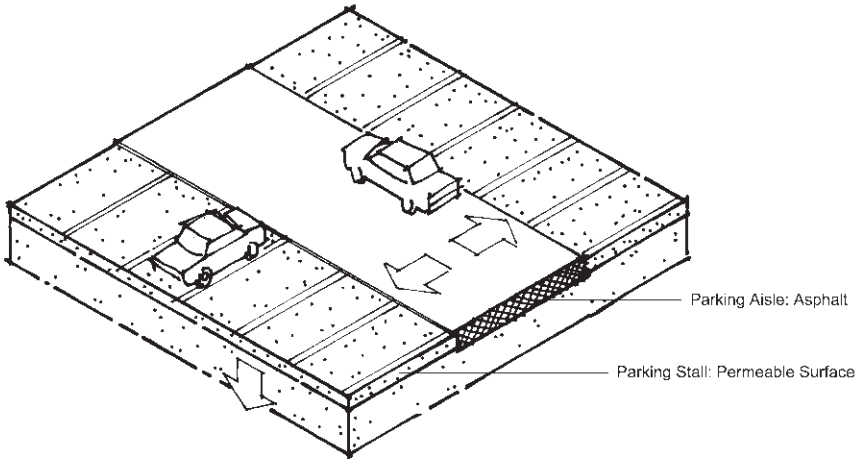
Materials and treatments used for stormwater management shall be natural in appearance. Channels lined by concrete or rip-rap are prohibited, unless necessary for public safety. Fencing shall be avoided, meaning that the bottom slopes of detention basins should be designed for safety. For properties adjacent to Arroyos, Petroglyph National Monument Buffer, and Other Public Open Space Corridors, see *Scenic Corridors* below.

Conservation Development. In Conservation Development areas, only native plants as contained in Plant List A should be used in Community Conservation Areas and areas held in Conservation Easements. See Conservation Development standards (in section preceding) for other open space requirements.

Benefits of Natural Drainage



Infiltration Opportunities: Parking Lots

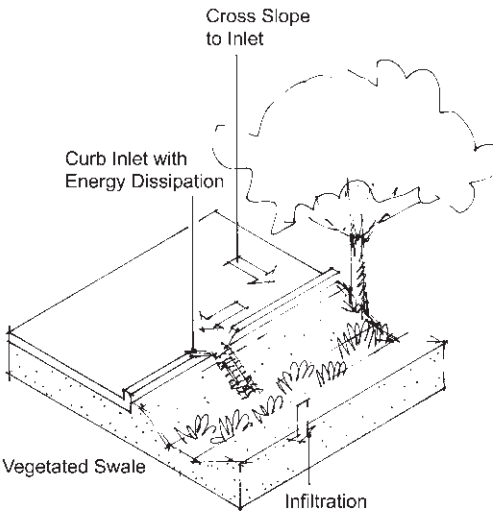


Parking stalls receive less wear and make good locations to increase infiltration through the use of permeable materials.

Diagram 31

Swale Streets

Urban Curb with Inlet to Swale



Urban Curbless Drainage to Swale

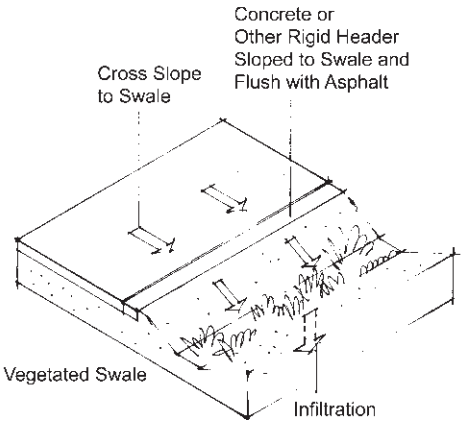


Diagram 32

5. Appropriate Planting Lists

The purposes of directing landscaping plants are to: reduce water usage, maintain the character of native plants now existing in the Monument, and to provide a harmonious landscape image.

Two plant lists are recommended to guide landscaping within Plan Area. More specific landscaping for subareas of Volcano Heights should be provided in required site plans and master plans.

List A - Petroglyph National Monument Plant List.

These are the plant species that were inventoried by the National Park Service in 1994-5 and represent almost 200 plants (amended). This plant list is in the Appendix.

List B - Xeric Plant List:

The plant species are the official xeric or low-water use plant list of the City of Albuquerque Water Conservation Office. The majority of the list is low and medium water-use plants. Some high-water use plants are also listed in order to classify them as such in implementation of the water conservation program. This xeric plant list is extensive and is maintained by the City. Contact the City of Albuqerque Water Conversation Office to get the most current information.

Where landscaping follows the Plant List B, at least 70 percent of the landscaped area should be covered by live plants in contrast to rock.

Table 14

X= Allowed

	Plant List A Native	**Plant List B Xeric**
Conservation Areas (Arroyos, Buffer Areas, and so on)	X	
Rural Residential, Executive Residential, and Suburban Residential Outside Development Envelope	X	
Rural Residential, Executive Residential Inside Development Envelope		X
Suburban Residential Inside Development Envelope	X	
Suburban Residential Inside Backyard		X
Town Center, Village Center, Neighborhood Mixed-Use, Office Campus, Urban Residential		X (1)
Scenic Corridor	X	
Other Roads		X (1)

(1) Landscaping within this range to be determined at the level of specific plans for these areas and roads.

VI
Open Space

1. Character and Intent

The Volcano Heights area is endowed with an extraordinary geologic and cultural heritage. Natural areas and connections with New Mexico's Pueblo, Hispanic, and Paleo-Indian past will be maintained and parks and trails will be added to enhance the quality of life for Volcano Heights residents and Albuquerque residents as a whole.

Neighborhood Edge

Most of the key geologic and cultural features have been set aside in 7,000 acres of federal and city-owned open space, forming a U-shaped pattern around the Plan Area. Volcano Heights development lies between open space lands preserving volcanoes and geologic windows on the west, open space on the south, and lands preserving the volcanic escarpment on the east. The Plan completes the open space network by connecting the existing large tracts to each other along arroyo corridors and greenbelts. This is accomplished by acquiring approximately 400 additional acres of open space land in the form of arroyos and surrounding habitat, archeological sites, rock outcrops, and widening escarpment lands.

Development in Volcano Heights creates miles of edge between development and open space. The Plan calls for a clear demarcation between the built environment and nature to both conserve natural features and to open dramatic views of the area's scenic features. Neighborhood Edge

Maintaining natural areas is a proven development strategy for creating communities that hold their desirability and value. Natural areas contribute to a positive image and a sense of community identity. They enhance neighborhood livability and their recreational components are an important ingredient for promoting the physical and mental health of residents – especially youth.

The Plan provides a comprehensive strategy to protect valuable resources and deliver exceptional recreational features. Policies of the Albuquerque/Bernalillo County Comprehensive Plan specifically state: "(o)pen space lands and waters should be acquired or regulated as appropriate to serve one or more of the following specific purposes:

- Conservation of natural resources and environmental features,
- Provision of opportunities for outdoor education and recreation,
- Shaping of the urban form,
- Conservation of archaeological resources,
- Provision of trail corridors,
- Protection of the public from natural hazards."

Conservation of Arroyo Corridors. Arroyos (natural drainages) traverse the Plan Area and connect it to major geologic features to the east and west. In the western portion of the area, the North Fork of the Boca Negra Arroyo runs from the Northern Geological Window to Boca Negra Canyon. A smaller arroyo, the Middle Fork of the Boca Negra Arroyo, runs eastward from the Middle Geologic Window to Boca Negra Canyon. Future efforts should link this ecosystem to the Rio Puerco wilderness.

Preserving the arroyos as natural drainages with ample buffers will maintain the richest habitat of sensitive plants and animals, which propagate in greater abundance and with greater diversity where water gathers naturally. Uninterrupted arroyo corridors link the largest expanses of open space to each other and thereby maintain the ecosystem by permitting species to migrate without barriers. The arroyo corridors also have cultural significance as the historic spine of a trails system that ran from the former Pueblos on the Rio Grande, up the slopes and Escarpment, past the Petroglyphs and other shrines, to the volcanoes.

The arroyo corridors will need to be of sufficient width to reduce erosion and to allow for the flow of arroyos to change — as impervious surfaces from development increase the quantity and decrease the quality of stormwater run-off.

The arroyo corridors present important trails and recreation opportunities, so long as they do not compromise overriding environmental objectives.

Buffer along Petroglyphs National Monument. While the Petroglyph National Monument (the "Monument") preserves the rocky escarpment that contains many petroglyphs, additional open space just above the escarpment is desirable. Trails will be limited in Monument lands, but trails should be created in the Buffer area just above the Escarpment. Small parks along the escarpment will further expand opportunities for the public to enjoy an exceptional setting and expansive views. The distinct horizon created by the top of the Escarpment(as seen from much of the West Side and the city as a whole could be lost if development is placed too close to the Escarpment's edge. (see the View Shed Analysis)

Trail Network. An exceptional trail system will be established by joining together the arroyo corridors, the buffer along Monument, major utility easements, and open space linkages into a continuous network.

Accessible and Diverse Parks. The Plan calls for a park within walking distance of most residents, and usually without the need to cross a busy arterial road. In many cases, neighborhood parks are co-located with elementary schools, to offer an efficient way of delivering a greater range of facilities. A Community Park is also provided with multiple sports fields and features that serve the greater West Side. A village plaza or

small urban park is designated near the center of every mixed-use Town and Village Center. In addition, shared community spaces are required of larger development projects to embed smaller park-like spaces within neighborhoods.

Protection of Archeological and Cultural Resources. The Volcano Heights Plan Area contains several sites of archeological significance, many of which (but not all) have been designated as open space. Map. These Petroglyph and settlement sites tend to be concentrated within and at the edge of the Northern Geologic Window, along arroyo corridors, on many rock outcroppings, and within the Monument. Importantly, many Petroglyph sites can only be fully understood and appreciated if visual connections are maintained to the volcanoes, Sandia Mountains and Rio Grande River.

Portions of the State Land parcel between the Northern Geologic Window and the high school site are proposed for open space acquisition because of their archeological and ecological significance. Here a reach of the North Fork of the Boca Negra Arroyo includes numerous stands of juniper that make a rich bird habitat. Near the gasline easement is the Boca Negra Wash Folsom site which tells the story of Ice Age Native Americans living 12,000 years ago. To the north of the Folsom site, there is a dry playa that contains a rich record of environmental change that spans the last 14,000 years.

Managing Valuable Natural Resources. Through a range of policies and actions, development in Volcano Heights can maintain high air and water quality, minimize the use of energy and materials, and protect the environment. Doing so will help provide for a more sustainable future, whether measured in environmental, health, or economic terms. Good stewardship of natural resources can also establish Volcano Heights' identity as a place that supports the on-going health of the community and its citizens—quality of life features recognized by the marketplace including corporations looking for new locations.

Scenic Corridors. The Volcano Heights area is endowed with scenic views of the Sandias, the volcanoes, and New Mexico wilderness. Views and scenic qualities of natural lands should be extensively preserved to maintain an 'open feel' to the public lands while development moves into the area.

Scenic corridors allow the general public to experience and view public open space lands in everyday ways, such as part of their commute. The careful design of roads through open space areas will do much to maintain a desert character in the area. Scenic corridors also allow people of varying physical abilities and interests to enjoy natural desert lands. Trails are provided immediately adjacent to permanent open, which reduces the demand for human travel on the ecologically sensitive lands.

Neighborhood Edge / Transitions. Landscaping, buildings, and roads are transitions from the natural desert of open space to the built environment. Numerous miles of 'edge' will be developed in Volcano Heights. Generally, roads or low density, one-story residential development abuts the open space. Where larger lots are anticipated, small outbuildings or building wings can create an 'inhabited wall' that avoids the monotony of an uninterrupted wall of uniform character. Building colors should be in harmony with the desert palette. Preferred edge fencing is stucco walls, post and wire, split rail, or 'coyote fencing.' Native vegetation should be used wherever landscaping is visible to the public.

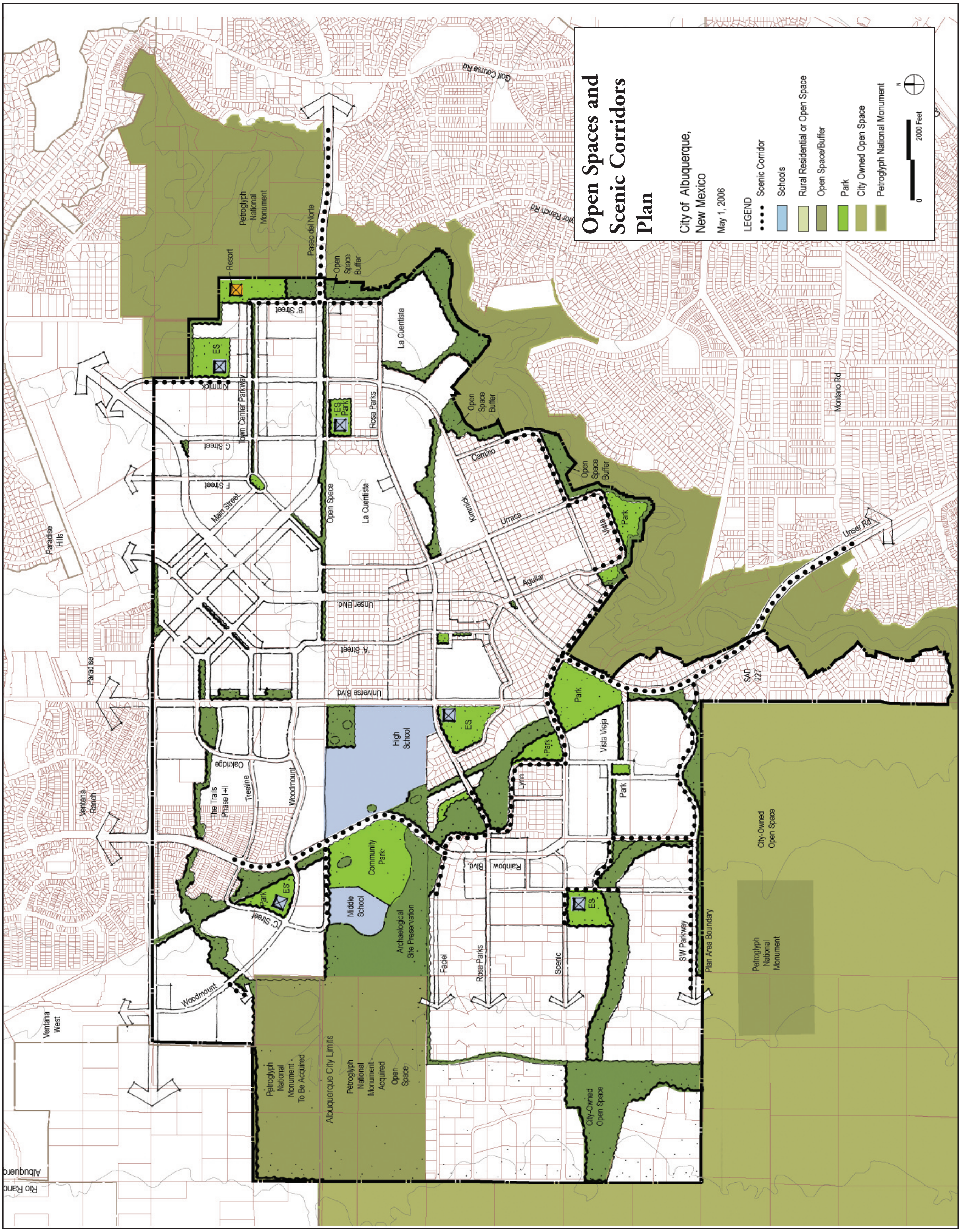

Open Spaces and Scenic Corridors Plan
City of Albuquerque, New Mexico
May 1, 2006
LEGEND
Scenic Corridor
Schools
Rural Residential or Open Space
Open Space/Buffer
Park
City Owned Open Space
Petroglyph National Monument
0
2000 Feet
N
Petroglyph National Monument
Resort
Paseo del Norte
Open Space Buffer
'B' Street
La Quentista
ES
ES Park
Kimmick
Town Center Parkway
Rosa Parks
G Street
F Street
Main Street
Open Space
La Quentista
Camino
Kimmick
Urraca
Vista
Park
Aguilar
Unser Blvd
Unser Rd
'A' Street
Universe Blvd
Park
Vista Vieja
High School
Oakridge
Treeline
Woodmount
The Trails Phase I+II
Lynn
Park
Community Park
Middle School
Rainbow Blvd.
ES
'C' Street
Archaeological Site Preservation
Facial
Rosa Parks
Scenic
SW Parkway
Plan Area Boundary
City-Owned Open Space
Petroglyph National Monument
Woodmount
Ventana West
Ventana Ranch
Paradise
Paradise Hills
Petroglyph National Monument - To Be Acquired
Albuquerque City Limits
Petroglyph National Monument - Acquired Open Space
City-Owned Open Space
Rio Rancho
Albuquerque
Golf Course Rd
Montano Rd
SAD 227

Exhibit 29

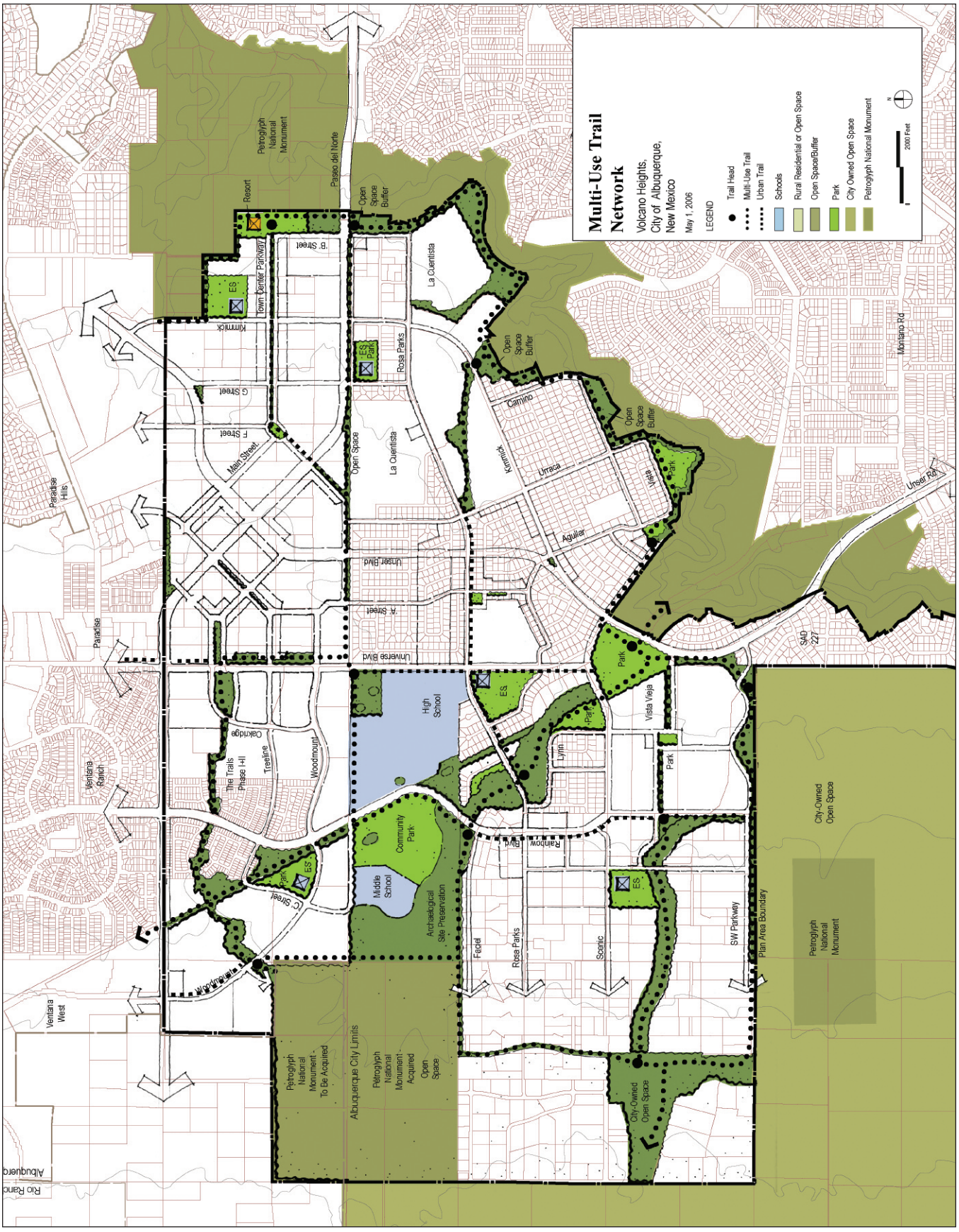

Multi-Use Trail Network
Volcano Heights, City of Albuquerque, New Mexico
May 1, 2006
LEGEND
Trail Head
Multi-Use Trail
Urban Trail
Schools
Rural Residential or Open Space
Open Space/Buffer
Park
City Owned Open Space
Petroglyph National Monument
2000 Feet
Petroglyph National Monument
Paseo del Norte
Resort
Open Space Buffer
B Street
Town Center Parkway
ES
Kimmick
G Street
F Street
Main Street
Rosa Parks
ES
Park
La Cuentista
Open Space
Camino
Urraca
Vista
Park
Aguilar
Montano Rd
Unser Rd
Unser Blvd
A Street
Universe Blvd
Paradise
Paradise Hills
SAD 227
High School
ES
Park
Vista Vieja
Park
Lynn
Ventana Ranch
The Trails Phase I-II
Treeline
Woodmount
Oakridge
Community Park
Middle School
Archaeological Site Preservation
Park
ES
C-C Street
Ventana West
Albuquerque City Limits
Petroglyph National Monument - To Be Acquired
Petroglyph National Monument - Acquired Open Space
Fadel
Rosa Parks
Scenic
Ranchow Blvd
ES
SW Parkway
Plan Area Boundary
City-Owned Open Space
Petroglyph National Monument
City-Owned Open Space
Albuquerque
Rio Ranch

Exhibit 30

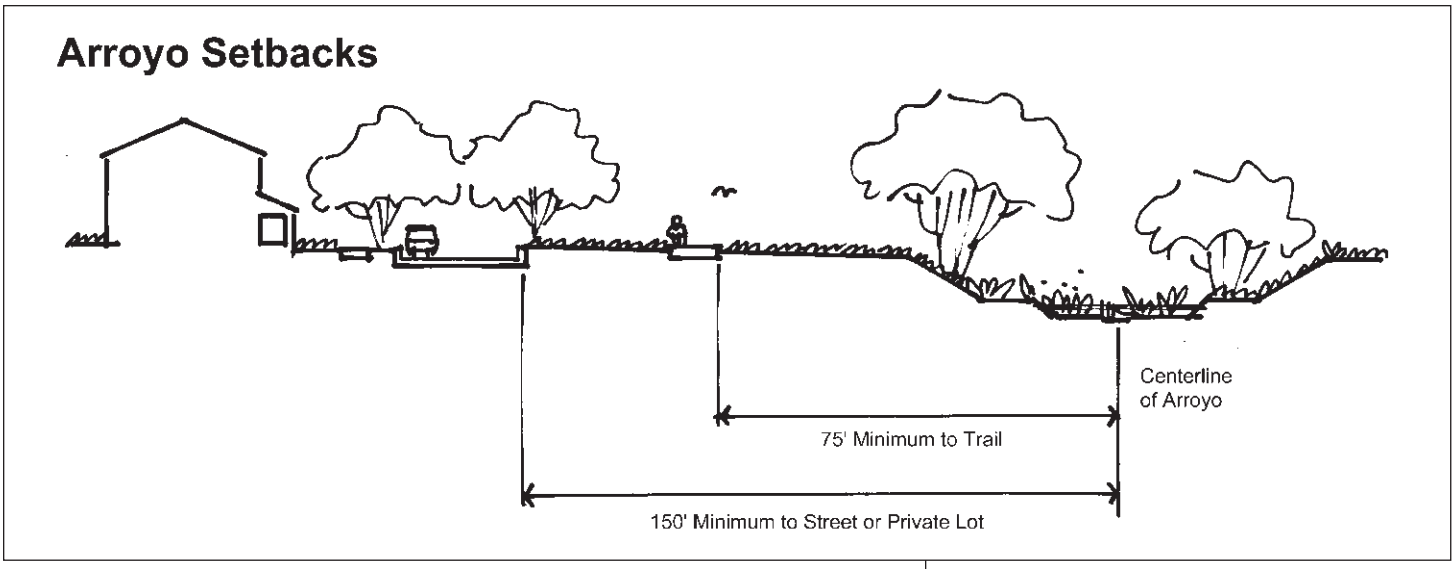


Diagram 33

2. Arroyos and Drainage

Master Drainage Plan. The natural drainage function of the North and Middle Forks of the Boca Negra Arroyo shall be maintained. To accommodate historic and developed flows, a "prudent line" treatment shall be used, which maintains as a drainageway a combination of the 100-year floodplain plus a 30-year erosion line. For the Boca Negra Arroyos, new development shall maintain at least a 300-foot open space corridor (edge-to-edge). The exception is that the Middle Fork of the Boca Negra will transition to a naturalized, engineered channel at Albericoque Place, the western edge of the Vista Vieja subdivision.

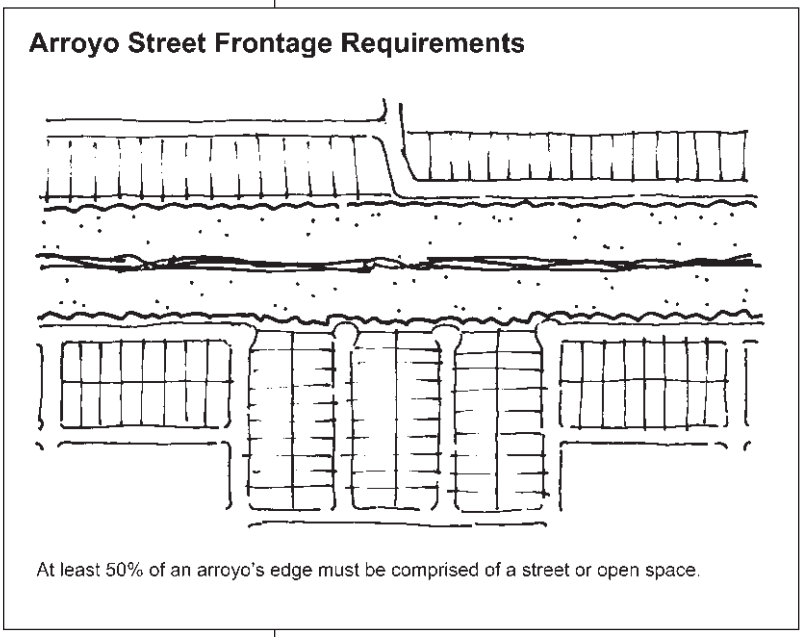


Diagram 34

Setback & Street Frontage. Development should be set back at least 150' from the centerline of the North and Middle Forks of the Boca Negra Arroyo. Streets shall be located outside of the setback. Streets or open space shall be required along at least 50% of any linear edge between the arroyo and private development.

Stormwater Management. The hydrology of the arroyos will be dynamic as development occurs. Generally, installation of stormwater management and recreational features should be avoided until changes resulting from development can be observed and inform their design. Naturalized features are encouraged for retaining stormwater and slowing its velocity. Fenced-off features are prohibited. Hydrological study and design shall be required of new development to determine what, if any, stormwater detention and energy dissipation features are needed.

Trails & Recreation. Trails may be located within the required setback, and shall be located along at least 80% of any linear edge between an arroyo and private development. Areas may be set aside for recreation, after hydrological changes from new development have become evident. No trail or recreational space should be placed within 50

feet of an arroyo centerline or any area deemed to have high biological value. For trail design, see "Public Trails" below.

Lighting. Only bollard lighting may be used within the Arroyo setbacks and along streets that abut or are within 100 feet of the setback.

Maintenance. It is recommended that AMAFCA assume responsibility for maintaining floodways within the specified setbacks. The City of Albuquerque shall be responsible for maintaining open space areas outside the floodway.

Migration of Plants and Wildlife. Crossings of the North Fork of the Boca Negra Arroyo are limited to Rainbow, Rosa Parks, Scenic, and Unser Boulevards. Crossings of the Middle Fork of the Boca Negra Arroyo are limited to Albericoque and Quivira. An oversized culvert should be used that provides for the movement of wildlife. The length of the culverts should be minimized; streets that cross should not have on-street parking and should bring sidewalks to the curb

Lighting Along Arroyos and the Petroglyphs National Monument Buffer

Streets Abutting Arroyos and Open Space
Only bollard lights should be used.

Diagram 35

3. Petroglyph National Monument Buffer

Trails & Recreation. Trails should be provided within the Monument Buffer Area to form a continuous network from Unser Blvd. to the northern boundary of the Plan Area. Areas for active recreation should be located at least 75 feet from the Monument boundary. For trail design, see "Public Trails" below.

Setback & Street Frontage. Streets shall be located outside of the Monument Buffer, and shall be required along at least 80% of any linear edge between the Monument and private development.

Lighting. Only bollard lighting may be used within the Buffer and along streets that abut or are within 100 feet of the Buffer.

Stormwater Management. Stormwater run-off shall be intercepted and managed as per standards developed by the City and National Park Service. Within the Monument Buffer, stormwater management features shall have a naturalized appearance and shall not be fenced off.

4. Archeological Resources

Setbacks. Development, trails, and recreation areas should be set back at least 50 ft. from prehistoric petroglyphs or other sites with high archeological value, unless part of an approved interpretive exhibit. Archeological sites may be fenced off using wrought iron or metal bar fencing not exceeding 5 feet in height. (See also *Landscape Design*.)

View Corridors. To the extent possible, streets and linear open spaces should extend from archeological sites of major cultural importance toward the Sandia Mountains to the east and the two northern-most volcanoes to the west. (See *View Shed Findings*)

Interpretive Features. When approved by a National Park Service representative from the Petroglyph National Monument, interpretive signage and exhibits are encouraged where major trails are near prominent archeological features, but should not exceed 3 feet in height. Trails & interpretive features should not come within 50 ft. of these sensitive features, unless designed under the guidance of a qualified archeologist.

Conservation. Rock outcrops—volcanic knolls or hillocks—occur randomly throughout the Plan Area. The exposed basalt retains both water and heat and, therefore is host to richer habitat. From an archeological point of view, these knolls were frequently used as viewpoints, resting areas, and places for various field activities occurring away from the primary pueblo residential areas.

All rock outcroppings containing petroglyphs shall be conserved. No petroglyph shall be defaced, altered, or moved without approval of a National Park Service representative from the Monument. Major rock outcroppings that exceed 1 foot in height and 6 feet in volume shall be conserved, except in the Town Center, Village Center, Neighborhood Mixed-Use, and Campus zones.

Plan documents. All subdivision, site plans, and master plans shall identify such rock outcrops and any petroglyphs that may be located on them. Within Urban Residential, Suburban Residential, Executive Residential and Rural Residential Zones, development plans should make adjustments to site and lot layouts and building pads in order to preserve rock outcroppings, and clusters of major rock outcroppings should be placed within publicly accessible open space. Within Town Center, Village Center, Neighborhood Mixed-Use, and Campus Zones, subdivision, site plans, and master plans shall be designed to conserve these outcroppings to the extent practicable and submittals for development approval shall contain a description of the actions taken to carry out this requirement.

5. Multi-use Trails

Access. Access to trails shall be reasonably direct, well-signed and ADA compliant. Break-away or removable bollards shall prevent access to trails by motorized vehicles, while allowing maintenance and emergency vehicles.

Design. Trails should be 9 feet wide to accommodate pedestrians, bicyclists, and maintenance and emergency vehicles.

Lighting. Bollard lighting should be used adjacent to the Monument Buffer and arroyo corridors, as specified above. In no case should light standards exceed 14' along trails.

Interpretive Features. Interpretive signs and overlooks should be considered so as to increase public awareness of unique cultural and geographic features.

Stormwater Management. Runoff from trails should be managed to avoid erosion. Trails should utilize permeable materials, if not in conflict with ADA compliance.

Shade Trees. Native, drought-tolerant shade trees should be planted along trails in a continuous way, but should not obstruct views of the volcanoes, the Rio Grande from the Monument Buffer), and the Sandia Mountains, nor negatively affect sensitive habitats.

Shared Open Space

6. Parks

Neighborhood Parks. Neighborhood Parks should be distributed throughout the Plan Area, and be placed in locations where large numbers of residents can walk a short distance to the park without crossing an arterial road. If new streets and trails are planned in concert with parks, circulation routes between the park and surrounding development shall be direct and not circuitous. Neighborhood Parks are between 2 and 8 acres. Neighborhood Parks may be joined with an Elementary School with a combined site area of at least 13 acres. Neighborhood Parks should include a playfield or multi-purpose lawn suitable for "pick-up" soccer or softball, and include play equipment for small children with nearby picnic tables. At least 60% of a park's perimeter should front onto a public street. Each development project or Sector Plan area should provide at least 2.6 acres of Neighborhood Park per 1,000 residents.

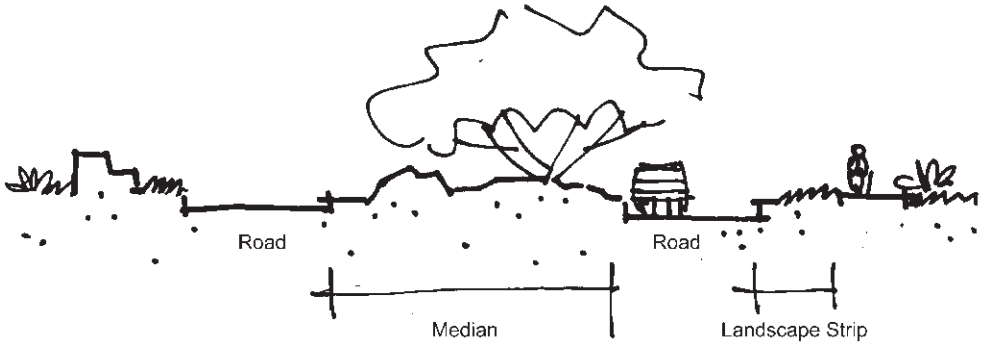
Community Park. The Community Park should provide 1 acre per 1,000 residents. The Community Park should contain multiple sport fields and/or other facilities of more regional importance, such as tennis courts, a swim center, group picnic areas, an amphitheater, and/or unique play structures. Features requiring floodlights or prone to a high level of noise should be sited away from residential uses. At least 50% of a park's perimeter should front onto a public street.

Village Plazas and small parks. The Town Center and Village Centers shall have a Plaza that is one to three acres. Buildings shall face into at least 80% of the perimeter of the Plazas.

Shared Open Space. Shared open spaces, such as courtyards, plazas or play areas, are required of projects exceeding 100 units. Such recreational facilities shall be privately owned and maintained, and may restrict use by non-residents. (See also *Land Use Element, Residential Open Space*.)

Community Support. The City shall encourage resident support groups for the purpose of fund-raising and organizing special events.

Arterials and Collectors Adjacent to Unique Features



Median and landscape strips should vary in width to avoid rock outcroppings and be sensitive to natural and cultural features.

Diagram 36

Lighting. Light standards should not exceed a height of 16 feet. Light bollards are recommended along most paths.

Parking. On-street parking within 300 feet of parks and joint-use opportunities should be considered to help meet projected parking demand. On-site parking should be incorporated only after it is demonstrated that available on-street parking is insufficient. Where parking is incorporated, it should be landscaped with at least one tree for every six parking spaces.

7. Scenic Corridors

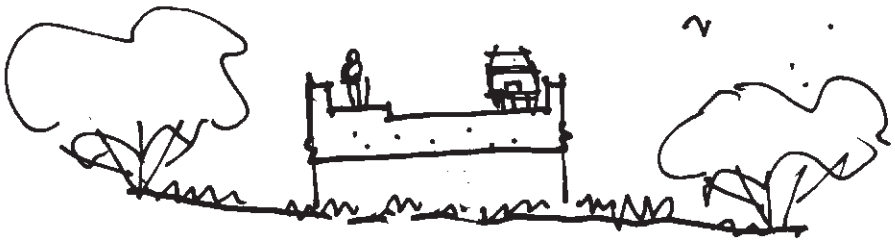
Application. Scenic Corridors are roads that abut portions of the Open Space network. (See the *Open Space and Scenic Corridor Plan*). Segments of the arterials Unser, Paseo del Norte, and Rainbow are designated as scenic corridors. Many collector and local segments are also scenic corridors, e.g., Lynn, Faciel, Scenic, Vista del Prado, Urraca, Pettrojo, and Alderete. As the preferred edge to open space is a public street, more scenic corridors will be added as area roads are designed abutting arroyos or the Monument buffer.

Abutting Development & Roads. Roads shall occur along at least 60% of any edge between development and any open space (i.e. any protected arroyo or Monument Buffer). Narrow roads such as local streets less than 30 feet wide with one-side parking are encouraged. Local roads edging the escarpment will carry the designation 'scenic walking street' where the function of the road will emphasize pedestrian travel as much as automobile travel. Traffic calming devices to reduce speeds to 25 mph or less will be employed, i.e., speed bumps, bulbouts, etc. (See *Transportation*) Trails within the public right-of-way and abutting the escarpment shall be made of stabilized, decomposed granite.

Street signs. A unique scenic corridor street sign will be established to designate all scenic corridors in Volcano Heights.

Design Standards. As scenic corridors are designed, the following design elements may be regulated to provide a uniform character to the scenic corridor: landscaping (public and private), walls and fences (public and private), medians, sidewalks/trails, pavement widths, speed limits, commercial building materials, and parking lot treatments. Median and landscape strips should vary in width to avoid rock outcroppings and to be sensitive to natural and cultural features. Native plants shall be used in medians and sidewalk buffers (see *Appropriate Planting Lists* in the *Landscaping in the Architectural and Landscape Design* Section)

Arroyo Crossings



Bridge arroyo or use wide culverts to allow the migration of wildlife. Minimize road and sidewalk widths to minimize length of passage.

Diagram 37

Lighting. Only bollard lighting shall be used within 100 feet of any Scenic Corridor (i.e. any arroyo or Monument buffer), with the sole exception of. arterial-arterial and arterial-collector intersections. This restriction will enhance desert views of sky and city, support desert wildlife, and reduce the impact of Volcano Heights on views from other parts of Albuquerque.

Arroyo Crossings. Bridges shall be made of concrete that is stained brown. Railings shall use Cor-ten steel. If Jersey barriers are used, they shall be painted to match other bridge features.

Paved widths shall be minimized where roadways cross arroyos (no parking or shoulders), and culverts shall be sized to accommodate the migration of wildlife.

Stormwater. The City of Albuquerque and AMAFCA shall develop standards to mitigate the impact of run-off on arroyos and the Monument. The National Park Service has a policy of no developed flow in the Monument, and a plan is needed to mitigate flows. Standards shall be developed (or project-specific studies shall be requested) for roadway and development projects. Features to be considered include: piping to maintain natural flows, energy dissipating rockery, swales, drywells and other infiltration features. Stormwater features shall have a natural appearance. (See section on Landscaping Design)

VII
Implementation

1. Intent

Adoption of the Volcano Heights Plan will satisfy an important land use regulatory requirement for making available more than 3,400 acres for the future growth of the Albuquerque urban area. Development of the Volcano Heights Area as envisioned in this Plan is expected to result in approximately 12,000 additional housing units, 30,000 residents, 5 million square feet of non-residential building containing 18,000 jobs. The total growth in the Albuquerque market is approximately 5,500 residential units and 7,000 new jobs per year. Since Volcano Heights is only a portion of the inventory of developable land, it is reasonable to expect build-out there to occur over a number of years.

City Ordinance, in Section 14-13 ROA 1994, states that the "Planned Growth Strategy [PGS] report found that the Albuquerque area faces critical challenges related to . . . timely provision of infrastructure, parks, schools, and other facilities to support new development." Section 14-13-2-3 states: "The Planned Growth Strategy, in conjunction with the Albuquerque/Bernalillo County Comprehensive Plan, shall guide the future development of the Albuquerque urban area. The Planned Growth Strategy shall serve as the comprehensive guide for this urban growth management program . . . ." PGS Bill No. F/S R-02-111(A) (Enactment No. 112-2002) identifies Adequate Public Facilities regulations as an approach to insure that facilities, such as streets, water, wastewater, hydrology, parks, and schools, are available in a timely way to support new development. This legislation states that "Adequate infrastructure and facility regulations shall be established through a future Adequate Public Facilities Ordinance (APFO)". Adequate Public Facilities regulations are a planning tool to phase and time urban growth.

The Volcano Heights Plan contains a number of recommendations related to open space; parks; natural, or "prudent line", treatment of the arroyo drainage system; expanding the buffer of the Petroglyph National Monument at the Escarpment edge; and so on, that call for recommendations regarding acquisition and funding.

The Volcano Heights Plan, as a Sector Plan, contains a number of regulations related to land use and zoning, urban design, roadway location and design, open space, landscaping, and so on. The Volcano Heights Plan attempts to set these standards at a more general level of specification. Procedures for development plan review and approval are needed that allow speedy review when consistent with the Volcano Heights Plan standards but also provide for flexibility to amend the regulatory requirements.

2. Growth Phasing and Timing

(See **Exhibit 31** *Phasing Diagram*)

It would be neither prudent nor wise to assume that development may take place in all parts of Volcano Heights concurrently. Growth does occur when a number of conditions are met, many of which have to do with the provision of infrastructure. In the past, the public sector has responded to requests from developers for facility capacity. Planned Growth Strategy Town Hall participants, however, said that they "wanted a different, more intentional approach to growth that is not reactive or piecemeal but follows carefully considered principles that are developed with a high degree of community involvement. The community needs to be more proactive . . . ." In the Volcano Heights Plan this direction is translated into a plan for the desired phasing and timing of growth.

The plan for phasing and timing of growth contains four categories:

- Pipeline projects
- Phase 1: 2006 to 2010
- Phase 2: 2010 to 2015
- Phase 3: 2015 to 2020 and beyond.

Given the practical constraints for planning, Special Assessment District and other development approvals, and infrastructure and facility construction, these are considered optimistic with regard to the years identified.

The considerations for the various phases of growth assigned to Plan subareas include the following:

- projects exempted from the Volcano Heights moratorium because of some level of preexisting development approvals;
- the phasing of the expansion of water and sewer service by the Albuquerque Bernalillo County Water Authority to Pressure Zones 3WR/4W and then to 5W;
- completion of Special Assessment District plans and approvals that will be necessary to design, finance and construct locally serving infrastructure;
- prioritization of the Volcano Cliffs Village Center including urban residential tracts as the first complete mixed-use village;
- response to fast-track development of the Albuquerque Public Schools Volcano Heights high school;
- unitary ownership of land by Longford Homes;
- allowance for the market in the Volcano Heights area to strengthen before the development of the higher density Town Center.

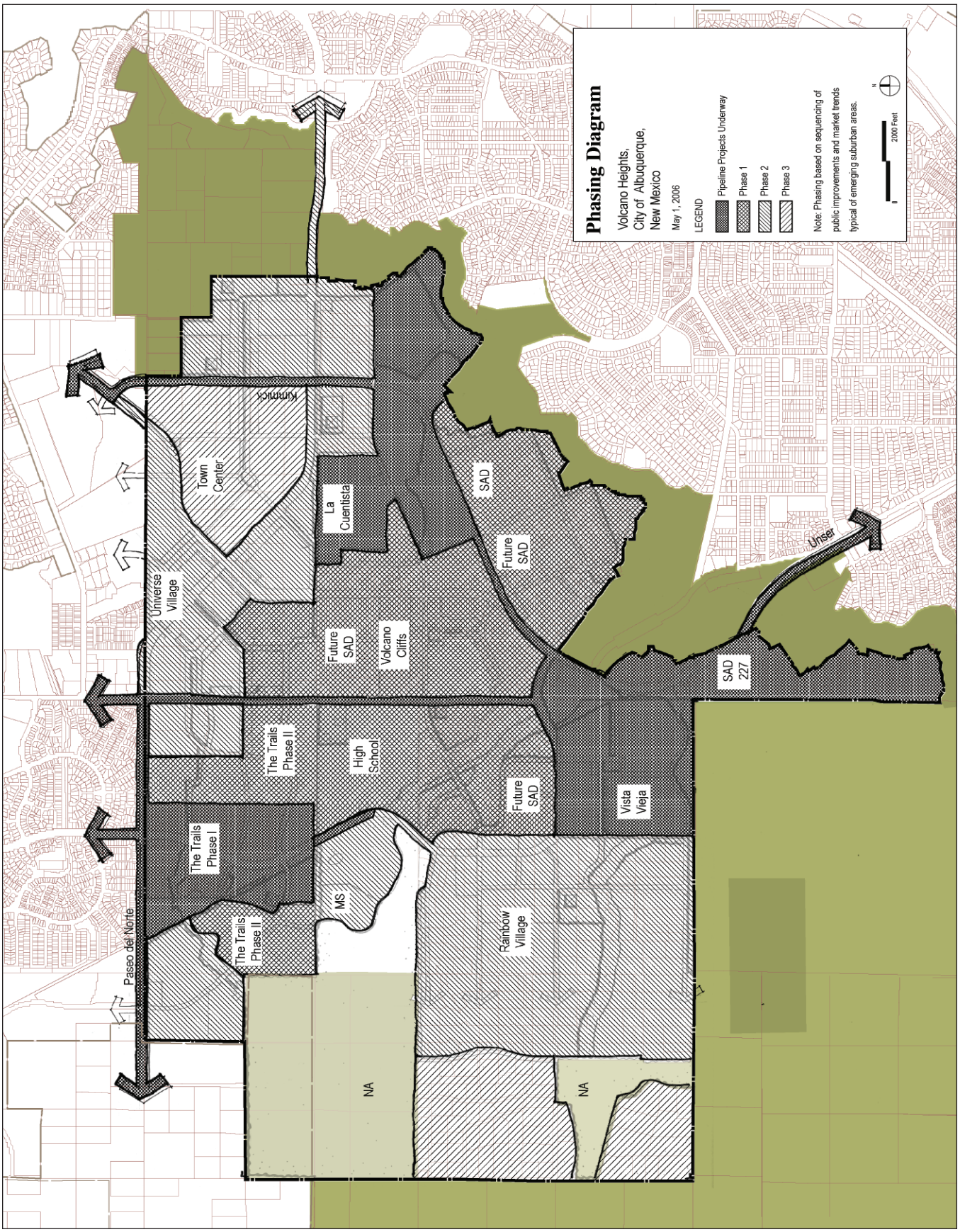

Phasing Diagram
Volcano Heights,
City of Albuquerque,
New Mexico
May 1, 2006
LEGEND
Pipeline Projects Underway
Phase 1
Phase 2
Phase 3
Note: Phasing based on sequencing of public improvements and market trends typical of emerging suburban areas.
2000 Feet
Kimmick
Town Center
Universe Village
La Cuentista
SAD
Future SAD
Unser
Future SAD
Volcano Cliffs
SAD 227
The Trails Phase II
High School
The Trails Phase I
Future SAD
Vista Viela
MS
The Trails Phase II
Paseo del Norte
Rainbow Village
NA
NA

Exhibit 31

3. Adequate Public Facilities

The City of Albuquerque shall establish Adequate Public Facilities regulations with regard to school facilities and transportation infrastructure capacity in the Volcano Heights Area. This will require a formal intergovernmental agreement with the Albuquerque Public Schools.

The purposes of Adequate Public Facilities regulations are:

- To link the provision of transportation and school facilities and services with the type, amount, density, rate, and timing of development;
- To manage new growth so that it does not outpace the provision of transportation and school facilities and services according to level of service standards;
- To coordinate public facility and infrastructure construction;
- To discourage sprawl and leapfrog development;
- To encourage the types of development that incorporate the community building and design principles contained in the Volcano Heights Plan.

In order to implement Adequate Public Facilities standards for schools and transportation infrastructure in the Volcano Heights Area, the following determinations will need to be made:

- The areas and subareas within Volcano Heights to which the transportation and school facility capacity standards apply. This is addressed below regarding elementary schools.
- The service standards for school facilities and transportation infrastructure to be applied. The Mid Region Council of Governments uses Level of Service (LOS) "D" for roadway budgeting purposes. Transportation modeling performed for this Plan indicates LOS conditions at "E" and "F" at intersections on Paseo del Norte and Unser under development build-out. Therefore, the suggested LOS for Volcano Heights is "E" for transportation. An important policy issue related to schools is the "lag time" between the construction of residences and the availability of public facilities to serve the development. In order to address this issue, the City and County should consider the experience of other local government where they allow a average enrollment-to-capacity level for schools of 130%.
- Current and projected transportation and schools facilities in the Volcano Heights Area as contained in the City's CIP, the MRCOG Metropolitan Transportation Plan (MTP), and the APS Facilities Master Plan. These capital planning documents must be consistent with the phasing and timing of development called for here.
- The point in the development approval process where the adequacy of roadway and school capacity must to be determined.
- Methods for reserving roadway and school capacity for approved development proposals.

Linking Residential Development Approval to School Facilities

Appropriate school locations are shown on the Land Use Plan. To meet current needs, APS planning and design for the new high school is well underway. The middle school that is shown on the Land Use Plan will be needed to meet demand generated from both Volcano Heights and from areas outside of the planning area. Both the high school and middle school are located on land that is currently owned by the State of New Mexico.

The Land Use Plan shows five elementary schools. The number of schools is based on student generation rates typical of suburban areas and APS school size standards. Importantly, the number of elementary schools shown is based on the minimum average density requirements, which is consistent with current market trends. If market support for dense housing was to increase appreciably, an additional elementary school might be needed.

The locations for elementary schools are based on a number of factors including access, proximity to trails, and adjacency to Village Centers and the Town Center (without displacing dense urban uses that can take best advantage of transit and conveniences contained in these Centers).

In **Exhibit 32** "***Elementary Schools and Service Areas***," each service area will generate enough students to fill one elementary school of about 650 students. The service areas have been configured to minimize the number of students who must cross limited-access arterials to get to school.

Based upon the Phasing Diagram, Woodmont Elementary and Rosa Parks Elementary would be built first, and would serve projects that have already been entitled (The Trails, La Cuentista, Vista Vieja and SAD 227), as well as housing built in SAD 228 and subsequent phases of The Trails. As the number of students generated in all of these areas combined may exceed the capacity of two elementary schools, it is likely that the next phase of school construction would lead with La Cuentista School and/or Rainbow School. Demand for Kimmick Elementary is likely to emerge later and concurrently with the Town Center area.

It is important to recognize that the Elementary School and Service Area diagram is a guide that must be integrated into the APS facilities master plan and funding program.

The boundary areas of the elementary schools and the phasing of their development shall be used to organize residential development in Volcano Heights. The City of Albuquerque already has adopted policy contained in Bill No. F/S R-05-297 which set the following regulation: "The approval of residential subdivisions and zone changes to residential or higher density residential zoning should only be allowed through careful consideration . . . and when APS has provided a viable solution for affected schools". This may be replaced with the following policy language in Bill No. R-06-74: "All pre-

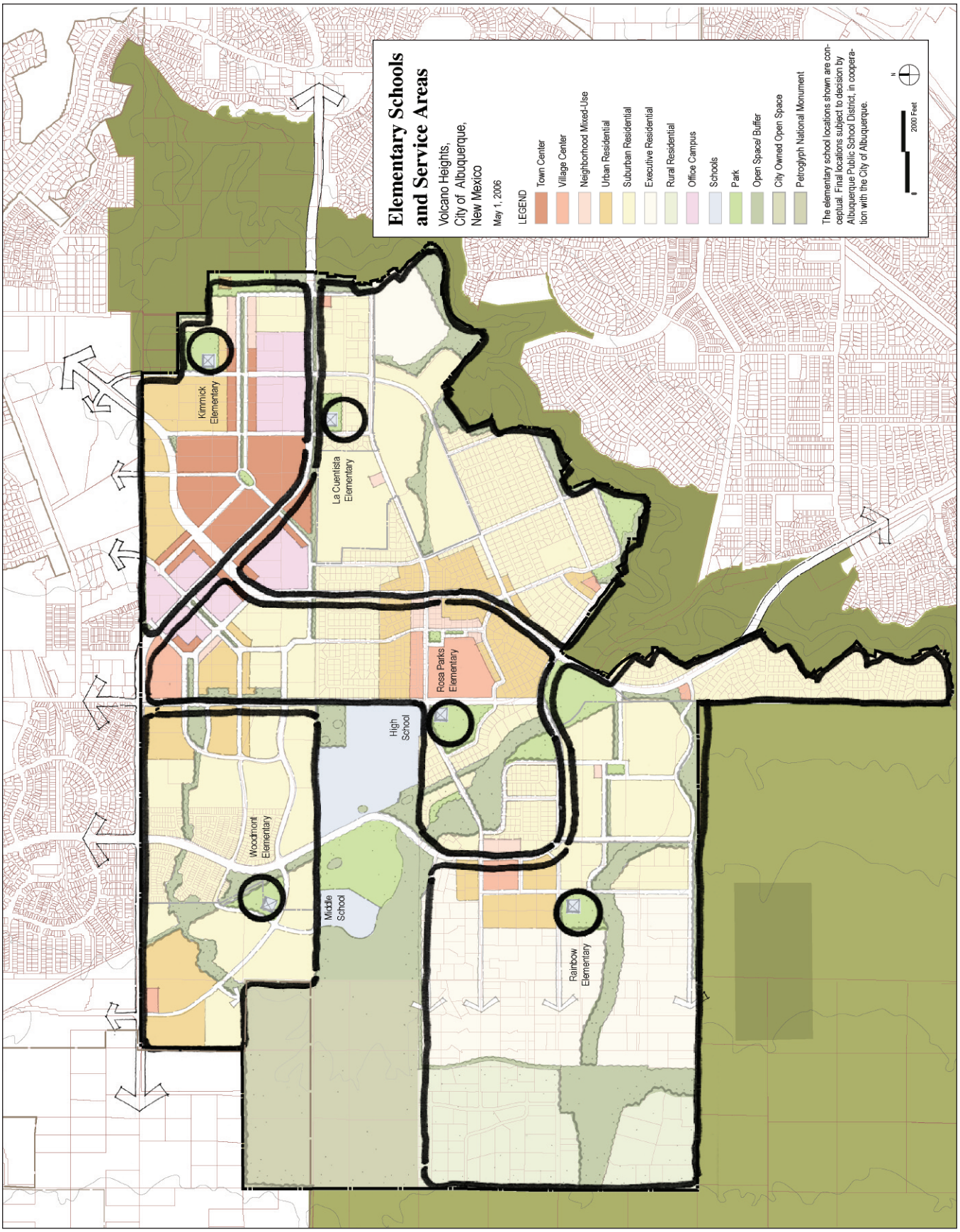

Elementary Schools and Service Areas
Volcano Heights, City of Albuquerque, New Mexico
May 1, 2006
LEGEND
Town Center
Village Center
Neighborhood Mixed-Use
Urban Residential
Suburban Residential
Executive Residential
Rural Residential
Office Campus
Schools
Park
Open Space/ Buffer
City Owned Open Space
Petroglyph National Monument
The elementary school locations shown are conceptual. Final locations subject to decision by Albuquerque Public School District, in cooperation with the City of Albuquerque.
N
2000 Feet
Kimmick Elementary
La Cuentista Elementary
Rosa Parks Elementary
High School
Middle School
Woodmont Elementary
Rainbow Elementary

Exhibit 32

liminary plats and final plats approved after October 31, 2006 involving residential lots, single-family or multi-family residential land use, must evidence written approval by APS in accordance with APS policy and procedures. No preliminary or final plat approval will be granted by the City for any subdivision containing any residential component without the prior written approval of APS." In either case, the City has an Adequate Public Facilities regulation related to the capacity of school facilities.

It is recommended that the City APF regulations be implemented through the following steps:

- APS produces a school facilities Capital Improvement Program that contains school Level of Service (LOS) standards addressing such issues as enrollment capacity at different school levels, facilities, number of students per classroom, and so on.
- The plan for new schools must be integrated with the City of Albuquerque's Comprehensive Plan and the Planned Growth Strategy. More specifically, the schools Capital Program shall:
    - Be coordinated with the City's adopted Land Use Assumptions for growth (which Assumptions must be modified by the City to incorporate the Volcano Heights Plan);
    - Establish the demographic relationship between new residential construction and the number of students contained within the households in these new structures both at the time of occupancy and over time.
- The APS school facilities Capital Improvement Program shall identify the schools contained in the Volcano Heights Plan, reflect their Plan location and boundary area, enrollment, number of households served, cost, and time frame in which they are planned to be constructed consistent with the Volcano Heights Plan phasing and timing assumptions.
- It is recognized that the Albuquerque Public Schools does not have sufficient financial resources to construct school facilities to meet the current demand. The school facilities Capital Improvement Program shall allocate a percent of total cost (or its equivalent dollar value) to each school that shall be met by (a) Albuquerque Public Schools' property tax revenues, and (b) other financial sources such as voluntary developer contributions, State of New Mexico grants, and so on.
- When the City receives a request for approval of a subdivision, or site plan for residential development, or zone change to residential or higher density residential, the City shall provide a conditional approval that becomes effective when the Albuquerque Public Schools certifies in writing, by referring to the standards identified above, that area schools will timely be available to meet the demand created by a specific new development. It is suggested that the final solicitation/assembly of resources from public sources and developers occur when approximately 50% of the residences within the school boundary area, sufficient to provide the student base for a new school have received conditional approval from the City.
- The Albuquerque Public Schools must have reasonable assurance of sufficient present and future revenues from guaranteed sources to build the new school facilities prior to certifying in writing that area schools will timely be available.

Consequently, residential development will be "stacked" by elementary school boundary areas until the proximate number of residence to be built to supply the students for a new school have received conditional City approval. APS then will authorize development activities to build the school and the homes will be permitted by the City. Students requiring school space in advance of new facilities will be handled by somewhat exceeding design capacity at existing, nearby schools. As a result, residential development will be phased and timed consistent with the urban growth management program.

Linking Development to Roadway Capacity.

The City of Albuquerque, together with the Mid Region Council of Governments (MRCOG), the Albuquerque Metropolitan Flood Control Authority, and the Albuquerque Bernalillo County Water Authority, provide a set of facilities and services needed to support new development, including water, wastewater, storm drainage, streets, parks, community center, libraries and so on.

The provision of these services will be coordinated in relation to the growth phasing and timing plan though City Adequate Public Facilities regulations and reviews related to roadways. The City of Albuquerque will organize the provision of these infrastructure items and services by its own agencies and others consistent with the growth plan. The critical link will be the opening of transportation capacity related to arterial and collector streets.

The APF system related to roadways will involve facility demand and capacity needs, which, in the Volcano Heights Area, will be based upon streets included in adopted capital programs that have an identified funding source and that will add capacity, the capacity required by development, and the timing of their construction.

It will be necessary to develop the administrative procedures for an Adequate Public Facilities system in order to fully implement the system within City government.

4. Parks, Open Space, Storm Drainage Acquisition

The Volcano Heights Plan (see VI **Open Space**) provides a detailed specification of open space, parks, and storm drainage properties needed within the area. These properties were identified by location and market data on recent sales was obtained by the Planning Team. The table below contains this break-down by category together with total acreages and recommended responsibilities/funding sources for acquisition.

Table 15: Open Space, Parks and Drainage Funding

Location and Purpose	Estimated Acreage	Recommended Funding Source
Open Space		
Monument Buffer – SAD 228 Area	38.1	Impact Fees / State of N.M.
Monument Buffer – Piedras Marcadas	25.8	Impact Fees / State of N.M.
Northern Portion of North Geologic Window – Petroglyph National Monument	120.0	City of Albuquerque Capital Improvement Program
State of N.M. Holdings – Archeological Sites	146.9	City Open Space Trade Lands
Parks		
Co-located Park / School Sites	57.4	Impact Fees
Storm Drainage		
North Boca Negra Arroyo	53.6	Impact Fees
Middle Boca Negra Arroyo	36.6	Impact Fees

The possible funding sources include development Impact Fees for Open Space / Parks / Trails and for Storm Drainage; the City's Capital Improvement Program, City Open Space Trade Lands, and State of New Mexico Capital Grants. It is assumed that the State of New Mexico may be willing to bear part of the cost of expanding the Escarpment edge of the Petroglyph National Monument because of its national importance. It also is assumed that the City will bear the pre-existing responsibility for completing the acquisition of the North Geologic Window in Petroglyph National Monument.

The land to be acquired, funding sources, acreage, and current estimated costs are included in the following table.

Table 16: Open Space, Parks and Drainage Funding

Purpose and Funding Source	Estimated Acreage	Estimated Cost
Open Space		
Impact Fees / State of New Mexico	63.9	$14.7 mm
City Capital Improvement Program	120.0	$4.2 mm
City Open Space Trade Lands	146.9	Trade
Parks		
Impact Fees	57.4	$4.2 mm
Storm Drainage		
Impact Fees	4.2	$4.1 mm

It should be noted that most of these dollar resources are unavailable at present. Impact fees are collected as building permits are pulled, relatively late in the development process. The recommended funding by the State of New Mexico is based on future legislative action. In turn, the City's experience with the acquisition of open space is that prices escalate significantly over time. It is recommended that the City attempt to acquire these properties ahead of development in the area. This may require advancing funds from public sources ahead of collections. Delay of purchases will result in much higher acquisition costs and, in turn, will alter the assumptions in the table above, possible involving other sources of funds such as SAD assessments, Tax Increment Financing, and Public Infrastructure Districts.

5. Development Approvals

It is intended that development reviews for plans that are consistent with the standards contained in the Volcano Heights Sector Plan be simplified.

The fragmentary ownership of land on most of the property approximately south of a line drawn along the north side of the State Land across the Plan area, however, will require more extensive planning efforts. It is quite likely that Special Assessment Districts will be needed there to address such issues as locally serving streets, water and sewer, hydrology improvements, and platting. It is reasonable that the SAD Plans should be integrated with broader master planning efforts to address the standards and incentives of this Plan such as density bonuses, Conservation Easements, Building Envelopes, architectural and landscaping standards and so on.

Moreover, the coherence of the Town Center and the Village Center areas (also including Urban Residential, Office Campus, and Neighborhood Mixed Use zones adjacent to the centers) calls for a more fine-grained and integrated Master Development Plans.

The table (right) indicates the separate planning efforts recommended and the suggested review mechanism for these plans. These plans must be consistent with the Volcano Heights Sector Plan to qualify for expedited review as identified in the table.

Table 17

Planning Area	Review Mechanism
Town Center (including Office Campus, Urban Residential, Neighborhood Mixed Use, Park and School Site Areas)	EPC
Volcano Cliffs Village Center (including Neighborhood Mixed Use, Urban Residential, Park and School Site)	EPC & SAD
Universe Village (including Urban Residential)	Planning Director & SAD
Rainbow Village (including Neighborhood Mixed Use and Urban Residential)	Planning Director
Volcano Cliffs Lands (including Suburban Residential, Park and School site, Open Space, small Village Center and Urban Residential area, property located on the east and west side of the Volcano Cliffs Village Center)	Planning Director & SAD
Longford Homes Area (not including the Universe Village, but from Universe to the Plan boundary on the west)	Planning Director
Executive Residential Area	Planning Director & SAD
Rural Residential Area	Planning Director & SAD

Plans submitted that are inconsistent with the regulations contained in the Volcano Heights Sector Plan are subject to the Sector Plan amendment process.

6. Amendments to Existing Plans

The Volcano Heights Plan contains elements that require subsequent amendments to several adopted Plans and incorporation into future plans and programs. The elements of the Volcano Heights Plan, upon adoption by the City, are assumed to amend existing City Plans. City and other staff are encouraged to take the actions needed to incorporate these changes into the appropriate plans and programs.

Affected are the following:

- Long Range Major Street Plan,
- Long Range High Capacity Transit Plan,
- Trails and Bikeways Plan,
- Unser Blvd Design Standards as contained in Bill No. F/S R-455, Enactment No. 169-1989,
- PGS Land Use Assumptions,
- Impact Fee Capital Improvement Program,
- City of Albuquerque Capital Improvement Program,
- Service Area Boundaries and capital plan of the Albuquerque / Bernalillo County Water Authority,
- Albuquerque Public Schools Facilities Master Plan
- Albuquerque/ Bernalillo County Comprehensive Plan (Centers and Corridors) to include the Town Center as an Activity Center

Appendix

Native Plant List A

List of Plant Species of Petroglyph National Monument - Plants found by Bleakly during a survey from August 1994 through September 1995. One hundred and ninety-two (192) plants from 40 families were identified. Arrangement is alphabetical by family, genus, and species with some synonyms and common names. An asterick (*) before the name indicates plants listed in Barlow-Irick (1993). Nomenclature according to Kartesz (1994). Common names from various sources. Number of species in each family are in parentheses after family name. A "pound sign" (#) indicates that a voucher is housed at the UNM Herbarium.

ADIANTACEAE Maidenhair Fern Family (1)
Cheilanthes feei T. Moore SLENDER LIPFERN #

AGAVACEAE Agave or Yucca Family (1)
Yucca glauca Nutt. SMALL SOAPWEED

AMARANTHACEAE Pigweed Family (3)
Amaranthus acanthochiton Sauer GREENSTRIPE #
Amaranthus wrightii S. Wats. WRIGHT'S AMARANTH #
Tidestroemia lanuginosa (Nutt.) Standl. WOOLLY TIDESTROMIA

ANACARDIACEAE Sumac Family (1)
Rhus trilobata Nutt. SKUNKBUSH, SKUNKBUSH SUMAC

APIACEAE (=UMBELLIFERAE) Parsley or Carrot Family (1)
Cymopterus acaulis (Pursh) Raf. var. *fendleri* (Gray) Goodrich (*Cymopterus fendleri* Gray) FENDLER SPRINGPARSLEY #

ASCLEPIADACEAE Milkweed Family (1)
Asclepias subverticillata (Gray) Vail WHORLED MILKWEED

ASTERACEAE (=COMPOSITAE) Sunflower Family (42)
Acourtia nana (Gray) Reveal & King (*Perezia nana* Gray) DWARF DESERT HOLLY, DWARF DESERTPEONY #
Aphanostephus ramosissimus DC. PLAINS DOZEDAISY #
Artemisia bigelovii Gray BIGELOW'S SAGEBRUSH #
Artemisia filifolia Torr. SANDSAGE, SAND SAGEBRUSH

Artemisia frigida Willd. FRINGED SAGE

Artemisia ludoviciana Nutt. ssp. *albula* (Woot.) Keck
WHITE SAGEBRUSH #

* *Bahia absinthifolia* Benth. #

* *Bahia dissecta* (Gray) Britt.

Bahia pedata Gray BLUNTSCALE BAHIA #

Baileya multiradiata Harvey & Gray *ex* Gray DESERT MARIGOLD #

* *Berlandiera* lyrata Benth.

Brickellia californica (Torr. & Gray) Gray
CALIFORNIA BRICKELLBUSH #

Chaetopappa ericoides (Torr.) Nesom (*Leucelene ericoides*(Torr.) Greene)
WHITE ASTER

* *Chrysothamnus nauseosus* (Pallas *ex* Pursh) Britt. ssp. *bigelovii* (Gray)
Hall & Clements #

Chrysothamnus pulchellus (Gray) Greene ssp. *pulchellus*
SOUTHWESTERN RABBITBRUSH #

Conyza canadensis (L.) Cronq. CANADIAN HORSEWEED

* *Gaillardia pinnatifida* Torr. #

Gaillardia pulchella Foug. FIREWHEEL

Gutierrezia sarothrae (Pursh) Britt. & Rusby BROOM SNAKEWEED #

Helianthus petiolaris Nutt. PRAIRIE SUNFLOWER

Hymenopappus flavescens Gray var. *canotomentosus* Gray
YELLOW-FLOWERED WHITE
RAGWEED, COLLEGEFLOWER #

Macheranthera canescens (Pursh) Gray HOARY TANSYASTER #

* *Machaeranthera gracilis* (Nutt.) Shinners
`(*Haplopappus gracilis* (Nutt.) Gray) #

Machaeranthera pinnatifida (Hook.) Shinners
(*Haplopappus spinulosus* (Pursh) DC.) LACY TANSYASTER

Malacothrix fendleri Gray FENDLER DESERTDANDELION #

Melampodium leucanthum Torr. & Gray PLAINS BLACKFOOT #

* *Microseris* sp. *Palafoxia sphacelata* (Nutt. *ex* Torr.) Cory OTHAKE #

Parthenium incanum Kunth MARIOLA #

Pectis angustifolia Torr. var. *angustifolia* NARROWLEAF PECTIS #

Psilostrophe tagetina (Nutt.) Greene WOOLLY PAPERFLOWER

Sanvitalia abertii Gray ABERT'S CREEPING ZINNIA #

Senecio flaccidus Less. var. *flaccidus* (*Senecio douglasii* DC. ssp. *longilobus*
(Benth.) L. Benson THREADLEAF GROUNDSEL #

Senecio multicapitatus Greenm. *ex* Rydb. RAGWORT GROUNDSEL #

Senecio riddellii Torr. & Gray RIDDELL'S RAGWORT OR
GROUNDSEL #

Stephanomeria pauciflora (Torr.) A. Nels.
BROWNPLUME WIRELETTUCE #

Thelesperma megapotamicum (Spreng.) Kuntze
HOPI TEA, GREENTHREAD

Thymophylla acerosa (DC.) Strother (*Dyssodia acerosa* DC.) PRICKLYLEAF DOGWEED #

Verbesina enceliodes (Cav.) Benth. & Hook. f *ex* Gray GOLDENCROWNBEARD, COWPEN DAISY

Xanthium strumarium L. COCKLEBUR

Zinnia grandifolia Nutt. ROCKY MOUNTAIN ZINNIA #

BIGNONIACEAE Bignonia Family (1)

Chilopsis linearis (Cav.) Sweet DESERT WILLOW

BORAGINACEAE Borage Family (4)

Cryptantha cinerea (Greene) Cronq. var. *cinerea* (*C. jamesii* Payson var. *multicaulis* (Torr.) Payson) JAMES' CATSEYE #

Cryptantha crassisepala (Torr. & Gray) Greene var. *elachantha* I.M. Johnst. THICKSEPAL CATSEYE #

Heliotropium convolvulaceum (Nutt.) Gray PHLOX HELIOTROPE

Lappula occidentalis (S. Wats.) Greene var. *occidentalis* (*L. redowskii* (Hornem.) Greene) FLATSPINE STICKSEED #

BRASSICACEAE (=CRUCIFERAE) Mustard Family (7)

Descurainia pinnata (Walt.) Britt. WESTERN TANSYMUSTARD #

Dimorphocarpa wislizenii (*Dithyrea wislizenii*) SPECTACLE POD; TOURISTPLANT

Lepidium lasiocarpum Nutt. var. *lasiocarpum* SHAGGYFRUIT PEPPERWEED #

* *Lepidium montanum* Nutt.

Lesquerella fendleri (Gray) S. Wats. FENDLER BLADDERPOD #

CACTACEAE Cactus Family (6)

Echinocereus fendleri (Engelm.) F. Seitz PINKFLOWERED HEDGEHOG CACTUS

Escobaria vivipara (Nutt.) Buxbaum (*Coryphantha vivipara* (Nutt.) Britt. & Rose) SPINYSTAR

Opuntia clavata Engelm. CLUB CHOLLA

Opuntia imbricata (Haw.) DC. TREE or WALKINGSTICK CHOLLA

Opuntia phaeacantha Engelm. BROWNSPINE PRICKLYPEAR

Opuntia polyacantha Haw. PLAINS PRICKLYPEAR

CAPPARACEAE Caper Family (1)

Polanisia dodecandra (L.) DC. ssp. trachysperma (Torr. & Gray) Ilitis SANDYSEED CLAMMYWEED #

CHENOPODIACEAE Goosefoot Family (5)

Atriplex canescens (Pursh) Nutt. FOURWING SALTBUSH

* *Chenopodium dessicatum* A. Nels. #

Chenopodium fremontii S. Wats. FREMONT'S GOOSEFOOT #
Krascheninnikovia lanata (Pursh) Guldenstaedt (*Ceratoides lanata* (Pursh) J.T. Howell; *Eurotia*
lantata (Pursh) Moq.) WINTERFAT

CUCURBITACEAE Gourd Family (1)
Cucurbita foetidissima Kunth COYOTE or MISSOURI GOURD

CUPRESSACEAE Cypress Family (1)
Juniperus monosperma (Engelm.) Sarg. ONESEED JUNIPER

EPHEDRACEAE Jointfir Family (1)
Ephedra torreyana S. Wats. TORREY JOINTFIR or MORMON TEA #

EUPHORBIACEAE Spurge Family (7)
Chamaesyce parryi (Engelm.) Rydb.
PARRY'S SANDMAT or SPURGE #
Chamaesyce serpylifolia (Pers.) Small
THYMELEAF SANDMAT or SPURGE #
Chamaesyce serrula (Engelm.) Woot. & Standl.
SAWTOOTH SANDMAT or SPURGE #
Croton texensis (Klotzsch) Muell.-Arg. TEXAS CROTON #
Euphorbia dentata Michx. TOOTHED SPURGE #
* *Tragia ambylodonta* (Muell.-Arg.) Pax & K. Hoffmann
Tragia ramosa Torr. BRANCHED NOSEBURN

FABACEAE (=LEGUMINOSAE) Bean or Pea Family (14)
Astragalus amphioxys Gray var. *amphioxys* CRESCENT MILKVETCH #
Astragalus ceramicus Sheld. var. *ceramicus* PAINTED MILKVETCH #
Astragalus lentiginosus Dougl. var. *diphysus* (Gray) Jones SPECKLED POD MILKVETCH #
Astragalus nuttallianus DC. SMALLFLOWERED MILKVETCH #
Caesalpinia jamesii (Torr. & Gray) Fisher JAMES' HOLDBACK
Dalea compacta Spreng. var. *compacta*
COMPACT PRAIRIECLOVER #
Dalea formosa Torr. FEATHERPLUME
Dalea lanata Spreng. var. *terminalis* (Jones) Barneby
WOOLLY PRAIRIECLOVER #
Dalea nana Torr. *ex* Gray var. *carnescens* Kearney & Peebles
DWARF PRAIRIECLOVER #
Dalea scariosa S. Wats. (*Petalostemon scariosa* (S. Wats.) Wemple)
ALBUQUERQUE PRAIRIECLOVER #
Hoffmannsegia glauca (Ortega) Eifert INDIAN RUSHPEA
Pediomelum hypogaeum (Nutt.) Rydb.
(*Psoralea hypogaea* Nutt.) SCURFPEA #

Psorothamnus scoparius (Gray) Rydb. (*Dalea scoparia* Gray)
BROOM DALEA; PURPLE SAGE

FUMARIACEAE Fumitory Family (1)

Corydalis aurea Willd. GOLDEN CORYDALIS, SCRAMBLED EGGS, GOLDENSMOKE, BUTTER AND EGGS

GROSSULARIACEAE Gooseberry Family (1)

Ribes sp. GOOSEBERRY

HYDROPHYLLACEAE Waterleaf Family (4)

Nama hispidum Gray BRISTLY NAMA

Phacelia crenulata Torr. var. *crenulata*
CLEFTLEAF WILDHELIOTROPE #

Phacelia integrifolia Torr. GYPSUM SCORPIONWEED #

Phacelia ivesiana Torr. IVES PHACELIA #

LINACEAE Flax Family (2)

Linum aristatum Engelm. BRISTLE FLAX

**Linum australe* Heller #

LOASACEAE Stickleaf Family (2)

Mentzelia albicaulis (Dougl.) Dougl. WHITESTEM BLAZINGSTAR

Mentzelia pumila (Nutt.) Torr. & Gray DWARF MENTZELIA #

MALVACEAE Mallow Family (5)

Sida abutifolia P. Mill. (*Sida filicaulis* Torr. & Gray)
SPREADING FANPETALS #

* *Sida neomexicana* Gray

Spheralcea angustifolia (Cav.) G. Don ssp. *lobata* (Woot.) Kearney
COPPER GLOBEMALLOW #

Spheralcea hastulata Gray (*Spheralcea subhastata* Coult.)
SPEAR GLOBEMALLOW #

Spheralcea incana Torr. *ex* Gray GRAY GLOBEMALLOW #

NYCTAGINACEAE Four O-clock Family (7)

Abronia fragrans Nutt. *ex* Hook.
FRAGRANT WHITE SAND VERBENA

* *Allionia choysia* Standl. #

Allionia incarnata L. TRAILING WINDMILLS #

Boerhavia spicata Choisy (*B. torreyana* (S. Wats.) Standl.)
CREEPING SPIDERLING #

* *Mirabilis glabra* (S. Wats.) Standl. (*Oxybaphus glaber* S. Wats.) #

Mirabilis linearis (Pursh) Heimerl NARROWLEAF FOUR O'CLOCK

Selinocarpus diffusus Gray SPREADING MOONPOD #

OLEACEAE Olive Family (1)

Menodora scabra Gray ROUGH MENODORA

ONAGRACEAE Evening Primrose Family (2)

Gaura coccinea Nutt. *ex* Pursh SCARLET BEEBLOSSOM

Oenothera pallida Lindl. PALE EVENINGPRIMROSE #

OROBANCHACEAE Broomrape Family (1)

Orobanche ludoviciana Nutt. (*O. multiflora* Nutt.) LOUISIANA BROOMRAPE #

PEDALIACEAE Sesame Family (1)

Proboscidea louisianica (P. Mill.) Thelleng COMMON DEVILSCLAW, DEVILSHORN, RAM'S HORN

PLANTAGINACEAE Plantain Family (1)

Plantago patagonica Jacq. (*P. purshii* Morris) WOOLLY PLANTAIN #

Plantago lanceolota L. NARROWLEAF PLANTAIN

POACEAE (=GRAMINAE) Grass Family (42)

Aristida adscensionis L. SIXWEEKS THREEAWN #

* *Aristida arizonica* Vasey

Aristida havardii Vasey HAVARD'S THREEAWN #

* *Aristida pansa* Woot. & Standl.

Aristida purpurea Nutt. var. *fendleriana* (Steud.) Vasey FENDLER'S THREEAWN #

* *Aristida purpurea* Nutt. var. *neallyi* (Vasey) Allred #

* *Aristida purpurea* Nutt. var *purpurea* #

* *Bothriochloa barbinodis* (Lag.) Herter #

Bothriochloa laguroides (DC.) Herter ssp. *torreyana* (Steud.) Allred & Gould (*Andropogon saccharoides* Sw.) SILVER BEARDGRASS or SILVER BLUESTEM #

Bouteloua aristoides (H.B.K.) Griseb. var. *aristoides* NEEDLE GRAMA #

Bouteloua barbata Lag. var. *barbata* SIXWEEKS GRAMA #

Bouteloua curtipendula (Michx.) Torr. SIDEOATS GRAMA

Bouteloua eriopoda (Torr.) Torr. BLACK GRAMA #

Bouteloua gracilis (Willd. *ex* Kunth) Lag. *ex* Griffiths BLUE GRAMA

Bouteloua hirsuta Lag. HAIRY GRAMA

* *Cenchrus carolinianus* Walt. (*Cenchrus incertus* M.A. Curtis)

* *Digitaria californica* (Benth.) Henr.#

Elymus elymoides (Raf.) Swezey (*Sitanion hystrix* (Nutt.) J.G. Sm.; *Elymus longifolius* (J.G. Sm.) Gould) SQUIRRELTAIL #

Enneapogon desvauxii Beauv. NINEAWN PAPPUSGRASS #

Erioneuron pulchellum (Kunth) Tateoka (*Dasyochloa pulchella* (Kunth) Willd. *ex* Rydb.) FLUFFGRASS, LOW WOOLLYGRASS #

Hilaria jamesii (Torr.) Benth. (*Pleuraphis jamesii* Torr.) GALLETA #

* *Koeleria macrantha* (Ledeb.) J.A. Schultes
(*Koeleria cristata auct. p.p. non* Pers.)
* *Lycurus phleoides* Kunth
Monroa squarrosa (Nutt.) Torr. (*Munroa squarrosa* (Nutt.) Torr.)
FALSE BUFFALOGRASS #
* *Muhlenbergia arenacea* (Buckl.) A.S. Hitchc.
Muhlenbergia arenicola Buckl. SAND MUHLY #
Muhlenbergia porteri Scribn. BUSH MUHLY #
Muhlenbergia pungens Thurb. SANDHILL MUHLY #
Muhlenbergia torreyi (Kunth) A.S. Hitchc. *ex* Bush RING MUHLY
Oryzopsis hymenoides (Roemer & J.A. Schultes)
Ricker *ex* Piper INDIAN RICEGRASS
* *Poa bigelovii* Vasey & Scribn.
Scleropogon brevifolius Phil. BURROGRASS #
Setaria leucopila (Scribn. & Merr.) K. Schum.
STREAMBED BRISTLEGRASS #
* *Setaria lutescens* (Weigel) F.T. Hubbard ?
Sporobolus contractus A.S. Hitchc. SPIKE DROPSEED
Sporobolus cryptandrus (Torr.) Gray SAND DROPSEED #
* *Sporobolus flexuosus* (Thurb. *ex* Vasey) Rydb. #
Sporobolus giganteus Nash GIANT DROPSEED #
Stipa comata Trin & Rupr. var. *comata* NEEDLEANDTHREAD #
* *Stipa neomexicana* (Thurb. *ex* Coult.) Scribn.
Stipa spartea Trin. PORCUPINEGRASS #
Vulpia octoflora (Walt.) Rydb. (*Festuca octoflora* Walt.)
SIXWEEKS FESCUE #

POLEMONIACEAE Phlox Family (1)
Ipomopsis pumila (Nutt.) V. Grant DWARF GILIA #

POLYGONACEAE Knotweed Family (4)
Eriogonum abertianum Torr. var. *abertianum* ABERT BUCKWHEAT #
* *Eriogonum effusum* Nutt.
Eriogonum polycladon Benth. SORREL BUCKWHEAT #
Eriogonum rotundifolium Benth. ROUNDLEAF BUCKWHEAT #
Rumex hymenosepalus Torr. CANAIGRE; DOCK #

PORTULACACEAE Purslane Family (1)
Portulaca sp. PURSLANE

RANUNCULACEAE Crowfoot Family (1)
Delphinium sp. LARKSPUR

ROSACEAE Rose Family (1)
Fallugia paradoxa (D. Don) Endl. *ex* Torr. APACHE PLUME

SALICACEAE Willow Family

Salix sp .WILLOW

SCROPHULARIACEAE Figwort Family (3)

Epixiphium wislizenii (Engelm. *ex* Gray) Munz (*Maurandya wislizenii* Englem. *ex* Gray) BALLOONBUSH #

Penstemon ambiguus Torr. GILIA PENSTEMON or BEARDTONGUE

* *Penstemon* sp.

SOLANACEAE Potato Family (6)

Chamaesaracha coronopus (Dunal) Gray GREENLEAF FIVE EYES #

Datura inoxia P. Mill. THORNAPPLE; JIMSONWEED #

Lycium pallidum Miers PALE WOLFBERRY

Nicotiana trigonophylla Dunal DESERT TOBACCO #

Physalis acutifolia (Miers) Sandw. (*P. wrightii* Gray) SHARPLEAF GROUNDCHERRY #

Solanum elaeagnifolium Cav. SILVERLEAF NIGHTSHADE

VERBENACEAE Vervain Family (2)

Aloysia wrightii Heller *ex* Abrams WRIGHT'S BEEBRUSH #

* *Tetraclea coulteri* Gray #

ZYGOPHYLLACEAE Caltrop Family (2)

Kallstroemia sp. CALTROP